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ABSTRACT

These instructor materials for an aviation maintenance technology course contain three instructional modules. The modules cover the following topics: selecting and using regulations, publications, and records; documenting aircraft records; and exercising mechanic's privileges and limitations. Each module contains some or all of these nine basic components--a module introduction and objective, performance objectives, instructor's module implementation guide, technical information supplements, workbook supplements, project guides, theory test, answers to theory test and workbook supplements, and a practical test. These materials were developed through a cooperative effort of airframe and powerplant mechanics, general aviation industry representatives, Federal Aviation Administration representatives, and vocational educators in Oklahoma to provide a comprehensive program in aviation maintenance technology. (KC)

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AVIATION MAINTENANCE TECHNOLOGY

GENERAL

G103 FUNDAMENTALS OF REGULATIONS, PUBLICATIONS, AND RECORDS

INSTRUCTOR MATERIAL

CE 046 486

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MODULE OF INSTRUCTION
FOR
AVIATION MAINTENANCE TECHNOLOGY

GENERAL
G103 FUNDAMENTALS OF REGULATIONS, PUBLICATIONS, AND RECORDS
SELECT AND USE REGULATIONS, PUBLICATIONS, AND RECORDS
G103-A

GENERAL
G103 FUNDAMENTALS OF REGULATIONS, PUBLICATIONS, AND RECORDS
SELECT AND USE REGULATIONS, PUBLICATIONS, AND RECORDS
G103-A

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INTRODUCTION

After World War I, it became obvious that the "new-fangled thing called an aeroplane" was here to stay. To encourage the growth of aviation and to promote safety for the public, two government agencies were created: the Civil Aeronautics Administration in 1938, and the Federal Aviation Administration in 1958. The "friendly aviation agency" as the latter is sometimes called, is your partner in the important task of keeping America's aircraft in top condition! You the aviation technician must have the knowledge and the ability to use the various regulations and publications that are essential in maintaining today's modern aircraft.

MODULE OBJECTIVE

After completion of this module, you will be able to identify, select, and use FAA publications related to aircraft maintenance. You will also be able to interpret type certificate data sheets, manufacturers' manuals, airworthiness directives, and be able to explain supplemental type certificates and parts manufacturers' approvals. You will demonstrate this knowledge by completing the procedures outlined in the workbook supplement. You will further demonstrate this knowledge by scoring 85 percent on the module theory test.

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G103 FUNDAMENTALS OF REGULATIONS, PUBLICATIONS, AND RECORDS
SELECT AND USE REGULATIONS, PUBLICATIONS, AND RECORDS
G103-A

SPECIFIC OBJECTIVES

After completion of this module, you will be able to:

1.	Match terms related to FAA publications and regulations to their correct definitions. (1)	Technical Supplements #1. #2 FAR 1	 Part 1
2.	Name the FAA operational level with which the A&P technician will most often communicate. (1)	EA-ITP-G EA-ITP-GW	7:III:43,44 7:8
3.	Match descriptions and titles of FARs related to maintenance to their correct numbers. (1) (NOTE: Delete Part 37 from the reference. This material is now included in FAR Part 21, Subpart O.)	EA-ITP-G FAR 1 EA-ITP-GW	7:III:45-46 7:7.8,9
4.	State facts related to maintenance, preventive maintenance, rebuilding, and alterations in accordance with FAR Part 43. (1)	FAR 1 EA-ITP-G	Part 43 7:III:49, 57-58
5.	State facts related to major alterations, major repairs, preventive maintenance, and scope and detail for annual and 100-hour inspections in accordance with Appendices A, B, and D of FAR Part 43. (1)	EA-ITP-G FAR 1 Appendix A, B, and D	7:III:58,74,81,82 Part 43
6.	State facts related to general eligibility requirements for certification of airmen other than flight crewmembers in accordance with FAR Part 65. (1)	FAR 1 EA-ITP-G EA-ITP-GW	Part 65 7:III:48-49 7:8,9,10
7.	State facts related to the purpose and use of advisory circulars, including General Aviation Airworthiness Alerts. (1)	EA-ITP-G Technical Supplement #3	7:II:27-28, 39-40
8.	State facts related to type certificates. (1)	Technical Supplement #4 FAR	 Parts 21,23.25,27, 29,31,33,35

SPECIFIC OBJECTIVES

9.	State facts related to type certificate data sheets, aircraft specifications, and aircraft listings. (1)	Technical Supplement #5 EA-ITP-G 7:II:28,31-38
10.	Select true statements related to supplemental type certificates and parts manufacturers' approvals and Technical Standard Orders (TSOs). (1)	Technical Supplement #6 FAR 1 Part 1 Subpart E,K,O
11.	State facts related to the development, publication, and use of airworthiness directives. (1)	Technical Supplement #7 EA-ITP-G 7:II:28, 41-42 FAR 1 Part 39 EA-ITP-GW 7:9
12.	State facts related to the types, availability, and uses of manufacturers' publications. (1)	Technical Supplement #8
13.	Select, read, and interpret FAA regulations, manufacturers' publications, and technical data. (3)	FAR 1 Parts 23, 65, 91 Current Library of Airworthiness Directives and TCDS' Manufacturer's Service Manual
14.	Interpret a type certificate data sheet. (3)	Type Certificate Data Sheet #3A19 Workbook Supplement #1

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INSTRUCTOR'S MODULE IMPLEMENTATION GUIDE

I. Implementation Suggestions

(NOTE: The instructor may want to make transparencies of sample publication material in Technical Information Supplements #4, #6, and #7, and Workbook Supplement #1. Have students read all material related to the specific objectives.)

Estimated Teaching Time		Theory	Lab
Objective 1	Discuss the meanings of terms related to FAA publications and regulations using Technical Supplements #1 and #2.		
Objective 2	Discuss the order of appropriate jurisdictional levels of the FAA. Explain to students that the local GADO office is the level with which they will have the most communication.		
Objective 3	Discuss the content of each FAR applicable to maintenance and discuss how the title is a brief description of what the part contains.		
Objective 4	Discuss applicability of FAR Part 43 as defined in FAR Part 43.1. Read and discuss each paragraph in detail, including terms, forms, and authorizations.		
Objective 5	Discuss major repair, major alterations, and preventive maintenance, including recording procedures in Appendices A and B of FAR Part 43. Discuss scope and detail for inspections in Appendix D of FAR Part 43.		
Objective 6	Discuss each paragraph of FAR Part 65 that applies to the general eligibility requirements for certification of A&P technicians (1, 3, 11, 13, 15-21, and Subpart D, 71, 73, 75, 79, and 90).		

INSTRUCTOR'S MODULE IMPLEMENTATION GUIDE

Estimated Teaching Time		Theory	Lab
Objective 7	Discuss the purpose and availability of Advisory Circulars, especially AC 43-16, 43.13 1A and 2A. Have students read Technical Supplement #3.		
Objective 8	Describe the process of securing a type certificate. Refer to FAR Parts 21, 23, 25, 27, 29, 31, 33, and 35. Have students read Technical Supplement #4.		
Objective 9	Explain how to read and interpret type certificate data sheets. Point out differences between specifications and type certificate data sheets. Refer to Technical Supplement #5.		
Objective 10	Explain the process of securing STCs, PMAs and TSOs and the technician's relationship to approved data. Have students read Technical Supplement #6.		
Objective 11	Describe the process of developing an airworthiness directive and how to interpret an AD. Highlight the compliance procedures for various parts of the AD, especially the recurrent compliance requirements and the importance of the technician carefully researching the applicability statements to see if any part or all of the AD note applies to the product involved. Explain that airframe ADs are always sent to the registered owner, but that other ADs are not always sent to the registered owner. Have students read Technical Supplement #7.		
Objective 12	Explain to students that a wealth of information is available for help with maintenance problems. Show students various publications and explain their uses. Have students read Technical Supplement #8.		

INSTRUCTOR'S MODULE IMPLEMENTATION GUIDE

Estimated Teaching Time		Theory	Lab
Objective 13	Explain the specific objective to students. Allow students to become familiar with the technical material outlined in the reference section of Objective 13. For testing this objective, provide students with all required publications. It is suggested that publications not needed also be provided to test students' ability to select the proper publications. Copies of Instructional Supplement #1 will be needed to answer part "g" of the test question. Excerpts from additional service manuals should also be provided. Students should be given access to a current technical library to research answers to test question. (NOTE: Due to the amount of time that will be necessary for students to complete test question 13, it is recommended that it be tested separately.)		
Objective 14	Explain and have students complete Workbook Supplement #1. Assist students as necessary.		

INSTRUCTIONAL SUPPLEMENT #1--Service Manual Excerpt For Test Question #13

SERVICE MANUAL

13-3A. TROUBLE SHOOTING (Model 185).

NOTE

This trouble shooting chart should be used in conjunction with the trouble shooting chart for the engine fuel injection system in Section 12A.

PROBABLE CAUSE	ISOLATION PROCEDURE	REMEDY
NO FUEL FLOW TO ENGINE-DRIVEN FUEL PUMP.		
Fuel shut-off valve not turned on.	Check position of valve.	Turn fuel shut-off valve on.
Fuel tanks empty.	Check fuel quantity.	Service with proper grade and amount of fuel.
Fuel line disconnected or broken.	Inspect fuel lines.	Connect or repair fuel lines.
Fuel cell outlet screens plugged.	Disconnect fuel lines from cell outlets. No flow indicates plugged screens.	Remove and clean screens and flush out fuel cells.
Defective fuel shut-off valve.	Disconnect outlet and inlet lines from valve. If fuel flows from inlet line but not through valve, it is defective.	Remove and repair or replace selector valve.
Plugged fuel strainer.	Inspect strainer.	Clean strainer and screen.
Defective check valve at electric fuel pumps by-pass.	Disconnect outlet and inlet lines from check valve. If fuel flows from inlet line but not through valve, it is defective.	Repair or replace check valve.
Fuel line plugged.	Starting at fuel pump inlet, disconnect fuel lines successively until plugged line is located.	Clean out or replace fuel line.
FUEL STARVATION AFTER STARTING.		
Partial fuel flow from the preceding causes.	Use the preceding isolation procedures, checking for sufficient rate of flow.	Use the preceding remedies.
Malfunction of engine-driven fuel pump or fuel injection system.	Refer to Section 12A.	Refer to Section 12A.
Fuel vents plugged.	Check per paragraph 13-10.	See paragraph 13-10.
NO FUEL FLOW WHEN ELECTRIC PUMPS OPERATED.		
Defective fuel pump switch.	Check continuity of switch.	Replace defective switch.
Open or defective circuit breaker.	Check visually; if not open, check continuity.	Reset. Replace if defective.
Loose connections or open circuit.	Check connections and wiring.	Tighten connections; repair or replace wiring.

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Fuel System
Trouble Shooting

PROBABLE CAUSE	ISOLATION PROCEDURE	REMEDY
Defective electric fuel pump.	Listen for clicking noise denoting pump operation. With proper power supply, lack of this indicates defective pump. If clicking noise is present, disconnect outlet line. With proper fuel supply to pump fuel under pressure should flow from outlet.	Replace defective pump.
Check valve fails to close at electric fuel pump by-pass.	Disconnect fuel line from fuel strainer to check valve, at the valve, and plug line. Operate pumps to see that valve closes and no fuel flows from open port.	Repair or replace valve.
Defective engine-driven fuel pump by-pass or defective fuel injection system.	Refer to Section 12A.	Refer to Section 12A.
NOTE Erratic or intermittent electric pump operation is usually caused by foreign material on the plunger. Remove the end cover and three screws securing plunger cup and valve. If cup valve is free, do not remove from cup. Remove plunger and spring from pump. Clean with gasoline, gently dress out any rough spots on plunger with crocus cloth, slosh the pump in gasoline, and reassemble. Cleanliness, good gaskets, and free movement of valves and plunger are essential. Resistance of each pump should be 4.87 to 6.4 ohms. Refer to figure 13-11 for pump details.		
NO FUEL QUANTITY INDICATION.		
Fuel tanks empty.	Check fuel quantity.	Service with proper grade and amount of fuel.
Circuit breaker open or defective.	Check visually; if not open, check continuity.	Reset. Replace if defective.
Loose connections or open circuit.	Check connections and wiring.	Tighten connections; repair or replace wiring.
Defective fuel quantity indicator or transmitter. (Also see paragraphs 16-37 and 16-38.)	Disconnect wire from transmitter at indicator not reading. Install jumper wire from good indicator (corresponding terminal) to indicator not reading. If indicator does not register, it is defective; if it registers, transmitter is defective.	Replace defective indicator or transmitter.

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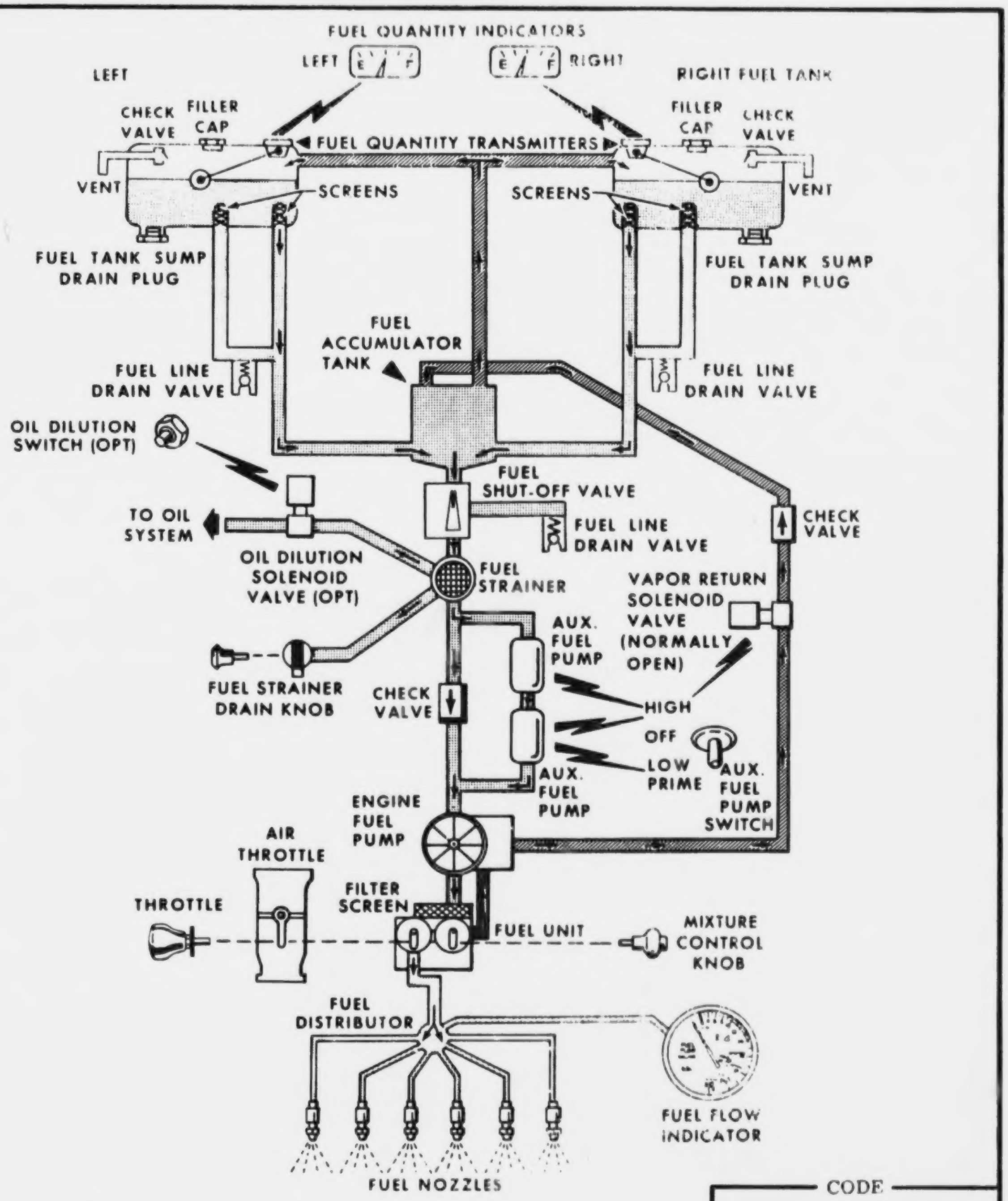
FUEL QUANTITY INDICATORS
LEFT
E
F
E
F
RIGHT
LEFT
RIGHT FUEL TANK
CHECK VALVE
FILLER CAP
FUEL QUANTITY TRANSMITTERS
FILLER CAP
CHECK VALVE
VENT
SCREENS
SCREENS
VENT
FUEL TANK SUMP DRAIN PLUG
FUEL TANK SUMP DRAIN PLUG
FUEL ACCUMULATOR TANK
FUEL LINE DRAIN VALVE
FUEL LINE DRAIN VALVE
OIL DILUTION SWITCH (OPT)
FUEL SHUT-OFF VALVE
TO OIL SYSTEM
FUEL LINE DRAIN VALVE
CHECK VALVE
OIL DILUTION SOLENOID VALVE (OPT)
FUEL STRAINER
VAPOR RETURN SOLENOID VALVE (NORMALLY OPEN)
AUX. FUEL PUMP
FUEL STRAINER DRAIN KNOB
CHECK VALVE
HIGH
OFF
LOW PRIME
AUX. FUEL PUMP
AUX. FUEL PUMP SWITCH
ENGINE FUEL PUMP
AIR THROTTLE
THROTTLE
FILTER SCREEN
FUEL UNIT
MIXTURE CONTROL KNOB
FUEL DISTRIBUTOR
FUEL FLOW INDICATOR
FUEL NOZZLES

NOTE

Fuel tank sump drain plugs may be replaced with optional quick-drain valves. Prior to 1962, drain plugs were used on fuel lines instead of quick-drain valves.

Figure 13-1B. Fuel Schematic - Model 185

CODE

▭	FUEL SUPPLY
▨	EXCESS FUEL AND VAPOR
▩	RETURN FUEL
----	MECHANICAL LINKAGE
⚡	ELECTRICAL CONNECTION

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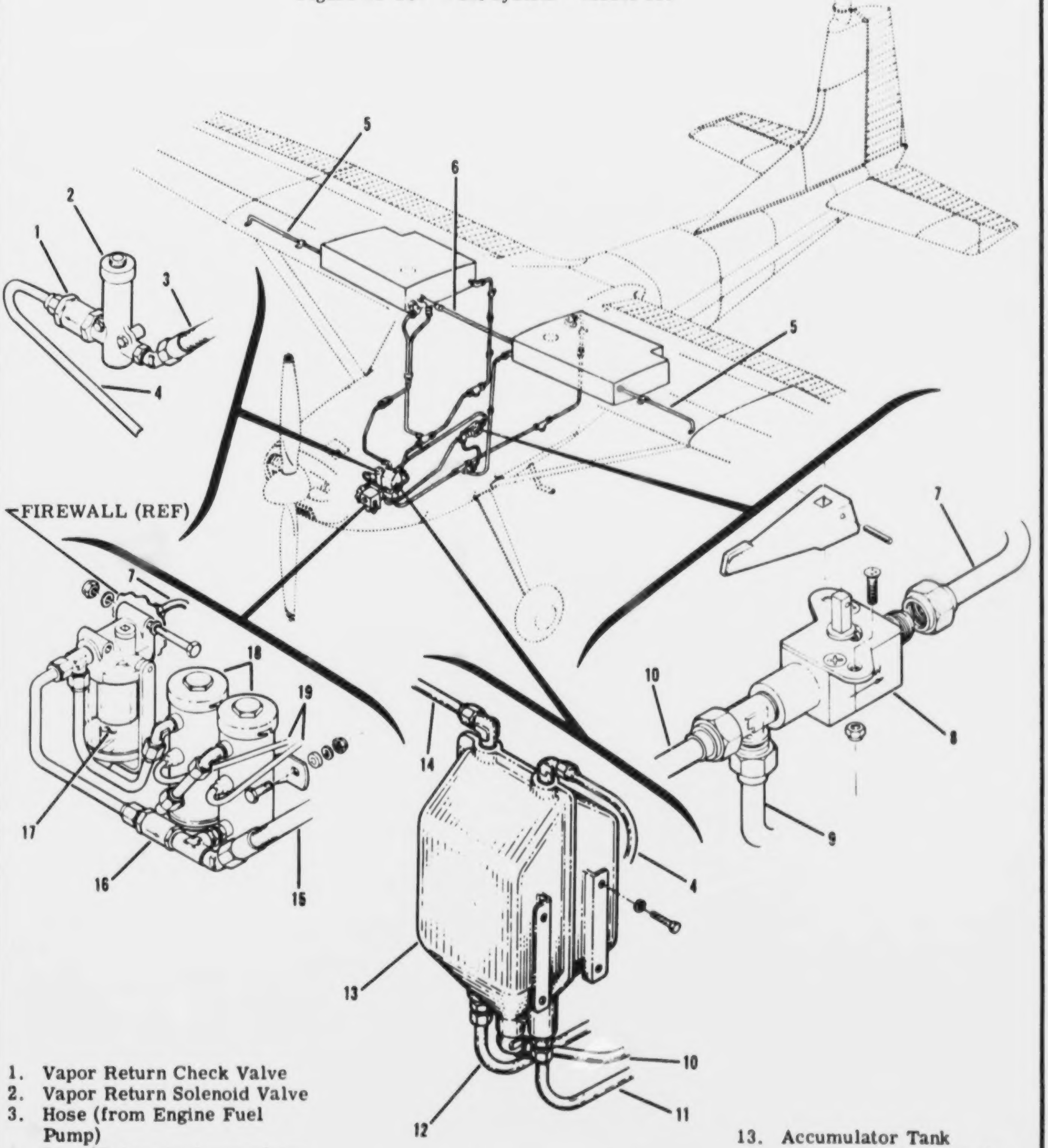
Figure 13-1C. Fuel System - Model 185



1. Vapor Return Check Valve
2. Vapor Return Solenoid Valve
3. Hose (from Engine Fuel Pump)
4. Line (Return to Accumulator Tank)
5. Fuel Tank Vent Line
6. Vapor Return (Crossover)
7. Line (Valve to Strainer)
8. Fuel Shut-Off Valve
9. Line (to Fuel Line Drain)
10. Line Accumulator Tank to Valve)
11. Line (Left Tank to Accumulator Tank)
12. Line (Rt. Tank to Accumulator Tank)
13. Accumulator Tank
14. Return Line (to Tanks)
15. Hose (to Engine Fuel Pump)
16. Check Valve
17. Fuel Strainer
18. Electric Auxiliary Fuel Pumps
19. Pump Electric Leads

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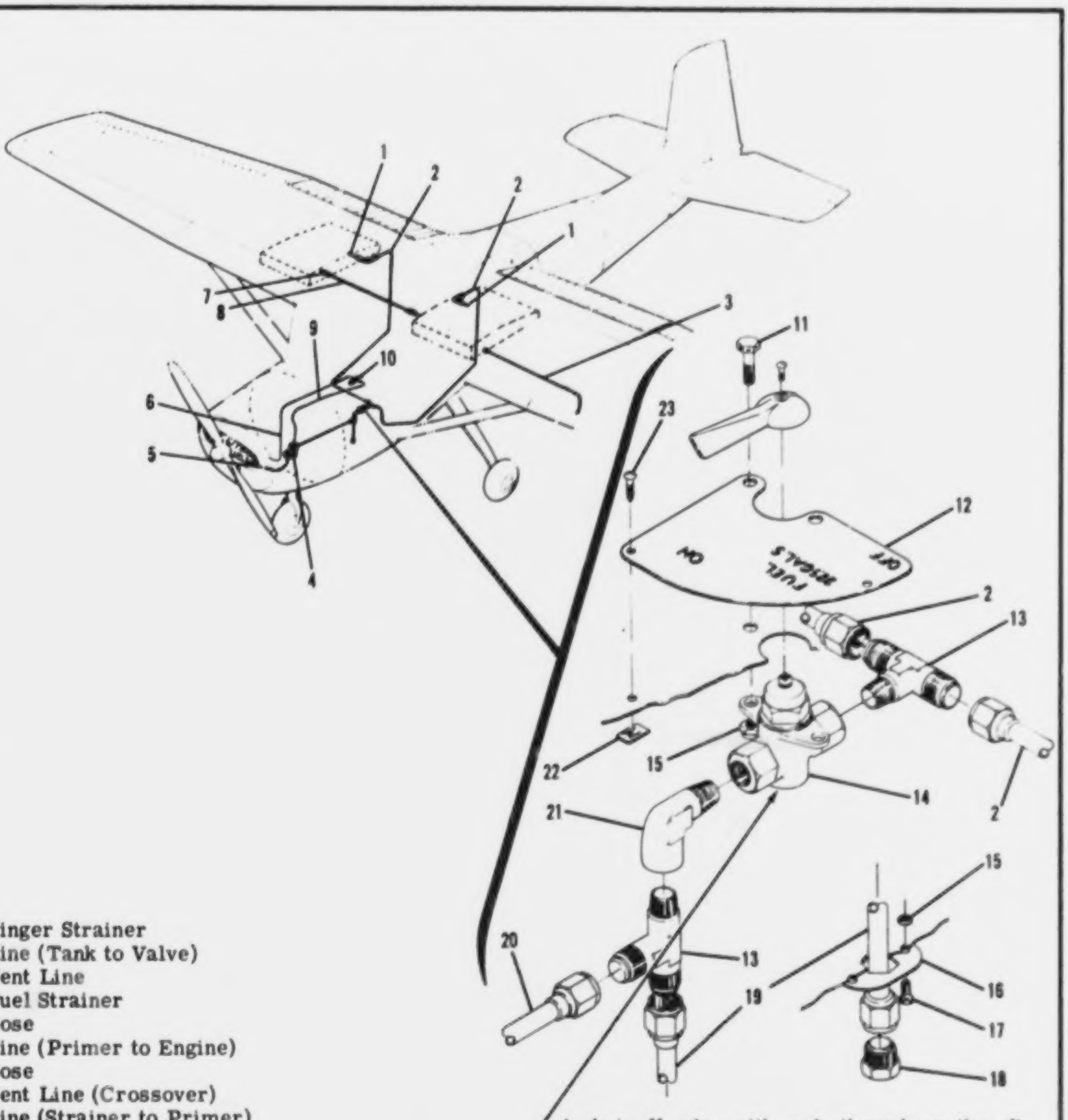

A shut-off valve with male threads on the aft end, a different tee, and nipples are used with larger fuel supply lines at serial 17770 and on.

1. Finger Strainer
2. Line (Tank to Valve)
3. Vent Line
4. Fuel Strainer
5. Hose
6. Line (Primer to Engine)
7. Hose
8. Vent Line (Crossover)
9. Line (Strainer to Primer)
10. Primer
11. Bolt
12. Plate
13. Tee
14. Shut-Off Valve
15. Nut
16. Lock Plate
17. Bolt
18. Drain Plug
19. Drain Line
20. Line (Tee to Strainer)
21. Elbow
22. Nut
23. Screw

Figure 13-2. Fuel System - Model 150

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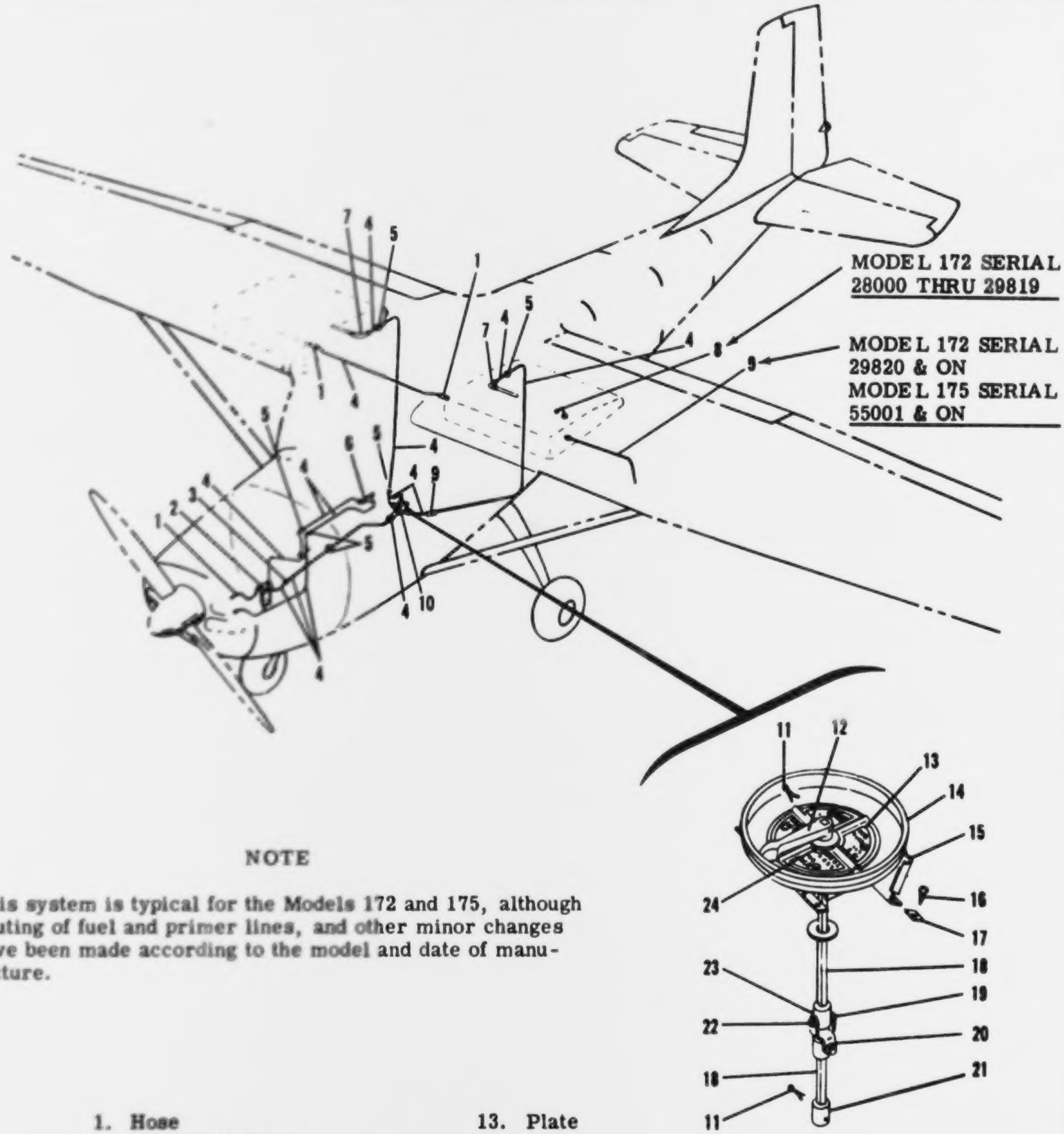
7
4
5
1
7
4
5
4
8
9
MODEL 172 SERIAL 28000 THRU 29819
MODEL 172 SERIAL 29820 & ON
MODEL 175 SERIAL 55001 & ON
1
4
5
6
5
4
4
9
1
2
3
4
5
4
10
4
11
12
13
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24
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22
18
11

NOTE

This system is typical for the Models 172 and 175, although routing of fuel and primer lines, and other minor changes have been made according to the model and date of manufacture.

1. Hose
2. Strainer & Drain
3. Elbow
4. Fuel Line
5. Union
6. Primer
7. Finger Strainer
8. Vent
9. Vent Tube
10. Valve
11. Cotter Pin
12. Handle
13. Plate
14. Cup
15. Bracket
16. Screw
17. Nut
18. Shaft
19. Pivot
20. Spacer
21. Pivot
22. Pin
23. Washer
24. Guide

Figure 13-3. Fuel System - Model 172 and 175

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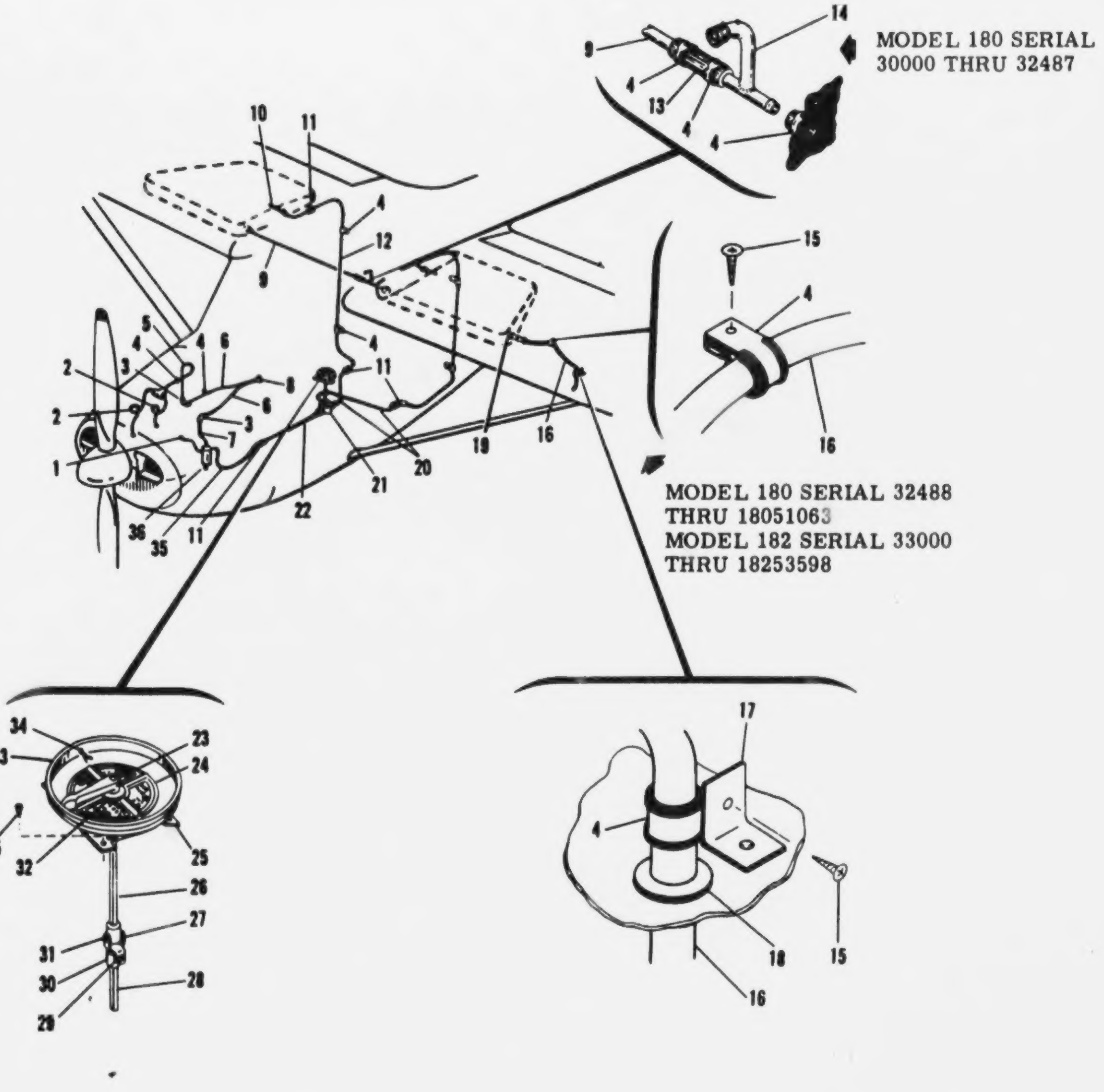
Figure 13-4. Fuel System - Models 180 & 182 (Prior to 1962)


14
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13
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11
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12
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1
8
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28

MODEL 180 SERIAL 30000 THRU 32487

MODEL 180 SERIAL 32488 THRU 18051063
MODEL 182 SERIAL 33000 THRU 18253598

1. Fuel Line (Strainer to Engine)
2. Primer Line (Baffle to Engine)
3. Elbow
4. Clamp
5. Primer Line (Firewall to Baffle)
6. Primer Line (Primer to Firewall)
7. Primer Line (Strainer to Firewall)
8. Primer
9. Vent Line (Crossover Line)
10. Finger Strainer
11. Union
12. Fuel Line (Tank to Valve)
13. Hose
14. Vent
15. Screw
16. Vent Line
17. Angle
18. Grommet
19. Vent Valve
20. Fuel Line (Union to Valve)
21. Selector Valve
22. Fuel Line (Valve to Union)
23. Handle
24. Plate
25. Bracket
26. Upper Shaft
27. Pivot
28. Lower Shaft
29. Washer
30. Spacer
31. Pin
32. Guide
33. Cup
34. Cotter Pin
35. Fuel Line (Union to Strainer)
36. Fuel Strainer

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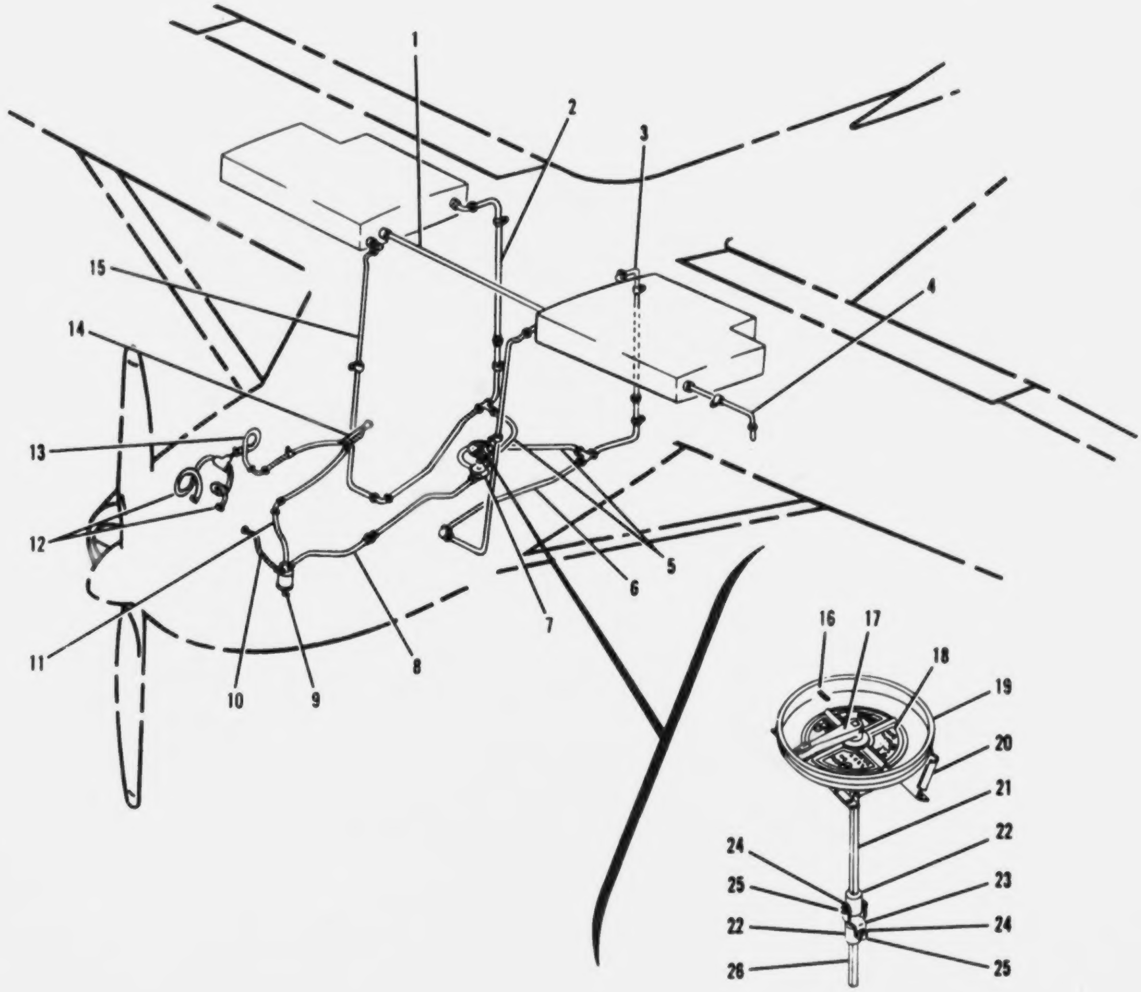
Figure 13-4A. Fuel System - Model 180 (1962 & on)



1. Vent Line (Crossover)
2. Aft Right Fuel Line
3. Aft Left Fuel Line
4. Fuel Tank Vent Line
5. Fuel Line (Tee to Valve)
6. Forward Left Fuel Line
7. Selector Valve
8. Fuel Line (Valve to Strainer)
9. Fuel Strainer
10. Fuel Hose (Strainer to Engine)
11. Primer Line (Strainer to Primer)
12. Primer Line (Tee to Engine)
13. Primer Line (Primer to Tee)
14. Primer
15. Forward Right Fuel Line
16. Roll Pin
17. Handle
18. Plate
19. Cup
20. Bracket
21. Upper Shaft
22. Pivot
23. Spacer
24. Washer
25. Pin
26. Lower Shaft

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13-4. FUEL CELL REPLACEMENT -180, 182 & 185

NOTE

These aircraft employ rubberized, bladder-type fuel cells, one of which is located in the inboard bay of each wing panel. The cells are secured by snap fasteners to prevent collapse of the flexible cells. The following general precautions stipulated by the U. S. Rubber Company should be closely observed:

1. Store cells in original shipping containers at room temperature and with no more than normal humidity.
2. Avoid use of sharp-pointed tools when working with cells to eliminate puncture and abrasion.
3. Before installation, clean cell compartment of all filings, trimmings, loose rivets and parts which might damage cell. Round off any metal corners in contact with cells and tape over all sharp edges and rough rivets.
4. Be sure cell is warm enough to be flexible during installation.
5. Assemble sealing and compression surfaces dry; no sealing paste is used.
6. When fastening or unfastening snap fasteners, tilt the fastener to one side to avoid straining cell material.
7. Drain fuel and flush the cell with light engine oil 24 hours before the cell is removed or deformed in any way.

a. Remove wing root fairings and fuel filler door assembly. Disconnect fuel lines at wing roots by removing hose clamps and working the lines out of the cell.
b. With direct-reading fuel quantity gage, loosen wing root upholstery around gage neck. With electrical gage unit, detach electrical lead.
c. Remove screws attaching fuel quantity gage, then carefully work gage free.
d. Remove fuel sump drain plug; then remove screws securing drain adapter to the wing.
e. Disconnect fuel vent lines and work out of fuel cell.
f. Remove screws around edge of filler neck adapter and remove all filler neck parts.
g. Working through filler neck opening, ease the snap fasteners loose from their fastenings.
h. Collapse and roll up the cell carefully, then work it out of the fuel cell bay through the filler opening.
i. Remove the clamp attaching the fuel sump drain adapter to the cell and remove the adapter.
j. Before installing a cell, make a thorough check of the fuel cell bay to make sure it is free of filings, loose rivets and parts. Tape over any rough edges which might puncture or abrade the cell. Install the fuel drain sump adapter to the cell before installation, then reverse the procedures enumerated above for reinstallation.

NOTE

Latest recommendation for lubrication and sealing fuel system fittings is MIL-T-5544 graphite-petrolatum (or equivalent). Apply to male threads only, omitting the first two threads.

13-5. PRESERVATION OF FUEL CELLS.

NOTE

The following is reprinted from U. S. Rubber Company directives.

"When synthetic rubber fuel cells are placed in service, the gasoline has a tendency to extract the plasticizer from the inner liner of the cell. This extraction of plasticizer is not detrimental as long as gasoline remains in the fuel cells, in as much as the gasoline itself will act as a suitable plasticizer. When the gasoline is drained from the fuel cell, the plasticizing effect of the gasoline is lost and the inner liner of the cell begins to dry out. Subsequent cracking or checking will occur. This cracking or checking may penetrate through the inner liner, permitting gasoline to diffuse through wall of the cell after the cell has been refueled. To prevent this failure, a thin coating of light engine oil should be applied to the inner liner of all serviceable fuel cells, which have contained gasoline, when it is evident that the cells will remain without fuel for more than ten days, whether installed in airplanes or in storage. The oil will act as a temporary plasticizer and will prevent the inner liner from drying out and cracking. If it becomes necessary to return the cell to the contractor or the vendor for testing or repair, do not allow quantities of oil to be puddled in the cell as it will make handling and repair much more difficult. Cells should be repacked as similar to the original factory pack as possible."

13-6. FUEL CELL REPAIRS.

CAUTION

No repairs are to be made on the radius of a cell in the fitting area of a cell. Cells with such damage are to be returned to the factory for repairs. No damage areas such as cuts and tears larger than one inch are to be repaired in the field.

a. Outside of cell.

1. Use a piece of synthetic rubber coated fabric (U. S. Rubber 5200 outside repair material) large enough to cover damage at least two inches from cut in any direction. Buff this material lightly and thoroughly with garnet paper and wash with methyl ethyl ketone (U. S. Rubber Co. 3339 solution) to remove buffing dust.
2. Cement buffed side of patch with two coats of U. S. Rubber Co. 3230 cement or Minnesota Mining Co. EC-678. Allow each coat to dry 10-15 minutes.
3. Buff cell area to be patched lightly and thoroughly with garnet paper and wash with 3339 solution to remove buffing dust.
4. Cement buffed area with two coats of U. S.

Rubber 3230 or Minnesota Mining Co. EC-678 cement. Allow each coat to dry 10-15 minutes.

5. Freshen cemented area of patch and cemented area of cell with 3339 solution.

6. While still tacky, apply edge of patch to edge of cemented area on the cell. With a roller or blunt instrument, roll or press the patch to the cemented area and roll or press it down a half-inch to an inch across at a time so as not to trap air between patch and cell. Lay fifty-pound shot bag over patch, which is protected by piece of Holland cloth to prevent sticking. Weight should be removed after six hours.

7. Seal coat edge of patch one-half inch with one coat of U. S. Rubber 3230 or Minnesota Mining Co. EC-678 cement and allow the cement to dry thoroughly.

b. Inside of cell.

1. After the damaged area has been patched on the outside of the cell and the repair allowed to stand a minimum of six hours, the cell is ready for the patch on the inside of the cell.

2. Lightly and thoroughly buff a piece of cured U. S. Rubber 5200/5187 nylon sandwich material large enough to cover damage at least two inches from cut in any direction. Wash buffing dust off patch with methyl ethyl ketone solution (U. S. Rubber 3339).

3. Cement buffed side of patch with two coats of black rubber cement, U. S. Rubber 3230 or Minnesota Mining Co. EC-678, and allow each coat to dry 10-15 minutes.

4. Buff cell area to be patched lightly and thoroughly with fine sandpaper (#"0") and then wash off buffing dust with methyl ethyl ketone solution.

5. Coat buffed area with two coats of black rubber cement, U. S. Rubber 3230 or Minnesota Mining Co. EC-678, and allow each coat to dry 10-15 minutes.

6. Freshen cemented area of patch and cemented area of cell with methyl ethyl ketone solution (U. S. Rubber 3339).

7. While still tacky, apply edge of patch to edge of cemented area, centering patch over cut in cell. With a roller or blunt instrument, roll or press the patch to the cemented area on the cell. Hold part of patch off the cemented area and roll or press it down a half-inch to an inch across at a time to avoid trapping air between patch and cell. Apply fifty-pound shot bag to repaired area and do not disturb for six hours.

8. Seal coat patch and one-half inch edge of patch with two coats of U. S. Rubber 3230 or Minnesota Mining Co. EC-678 cement. Allow the first coat to dry one hour or more. Wipe patch and cemented area lightly with #10 oil, so that when the cell is in its original position the patch area will not stick to other areas of the cell.

c. Scuffed fabric.

1. Buff area surrounding scuffed fabric.

2. Wash buffing dust from area with 3339 solution.

3. Apply two coats of U. S. Rubber 3230 or Minnesota Mining Co. EC-678 cement to the buffed area, allowing ten minutes drying time between coats.

NOTE

A fuel cell repair kit, U. S. Rubber Kit No. RK-30S, contains all the necessary materials to repair a fuel cell. This kit is available from the Cessna Spare Parts Department.

SHOP NOTES:

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GENERAL
G103 FUNDAMENTALS OF REGULATIONS, PUBLICATIONS, AND RECORDS
SELECT AND USE REGULATIONS, PUBLICATIONS, AND RECORDS
G103-A

TECHNICAL INFORMATION SUPPLEMENT #1 - Terms and Definitions

A. Airworthy - Condition of an aircraft, aircraft engine, or component that meets all requirements for its original certification

B. Airworthiness certificate - Certificate issued by the FAA to all aircraft which have met minimum standards required for certification

C. Airworthiness directive (AD) - Regulatory notice sent out by the FAA to registered owner of an aircraft informing him or her of a condition that must be corrected for the aircraft to maintain its airworthiness status

D. FAA-PMA - Identifying letters required on an aircraft part or component to signify it as being manufactured under a Federal Aviation Administration Parts Manufacturing Approval

E. Federal Aviation Administration (FAA) - Also called the Administrator; part of the Department of Transportation which establishes rules and regulations as well as enforces those rulings that are applicable to the FARs

F. Federal Aviation Regulations (FARs) - Rules, regulations, and guidelines established by the FAA for safety and operation of civil aircraft

G. Service bulletin - Information issued by manufacturer of an aircraft, aircraft engine, or component that details maintenance procedures that will enhance the safety of, or improve the performance of, the product

H. Service or maintenance manual - Manual issued by manufacturer of an aircraft, aircraft engine, or component; describes approved methods of service and repair

I. Supplemental type certificate (STC) - Certificate authorizing an alteration to an airframe, aircraft engine, or component which has been granted an Approved Type Certificate (ATC)

J. Type certificate - Approval to manufacture for sale an aircraft, aircraft engine, or propeller

K. Type certificate data sheet (TCDS) - Official specifications of an aircraft, aircraft engine, or propeller

L. Aircraft listing - Specifications for older aircraft, aircraft engines and propellers of which there are not more than fifty in the FAA registry

M. Aircraft specifications - Technical data for aircraft, aircraft engines, and propellers certificated under the Civil Air Regulations

(NOTE: The Civil Air Regulations were developed before the Federal Aviation Regulations.)

N. Advisory Circular - Nonregulatory information issued by the FAA to enable maintenance technicians to understand and comply with federal aviation regulations

O. Airworthiness alert - Issued on a subscription basis as AC 43-16 to provide a communication channel for the interchange of service experience for the improvement of aeronautical product durability, reliability, and safety

GENERAL
G103 FUNDAMENTALS OF REGULATIONS, PUBLICATIONS, AND RECORDS
SELECT AND USE REGULATIONS, PUBLICATIONS, AND RECORDS
G103-A

TECHNICAL INFORMATION SUPPLEMENT #2--FAR Part 1-Definitions and Abbreviations

(NOTE: The student will only be responsible for underlined terms.)

Part 1—Definitions and Abbreviations

§ 1.1 General definitions.

As used in subchapters A through K of this chapter unless the context requires otherwise:

[Delete "Accelerate-stop distance and its definition.]

"Administrator" means the Federal Aviation Administrator or any person to whom he has delegated his authority in the matter concerned.

"Aerodynamic coefficients" means nondimensional coefficients for aerodynamic forces and moments.

"Air carrier" means a person who undertakes directly by lease, or other arrangement, to engage in air transportation.

"Air commerce" means interstate, overseas, or foreign air commerce or the transportation of mail by aircraft or any operation or navigation of aircraft within the limits of any Federal airway or any operation or navigation of aircraft when directly affects, or which may endanger safety in, interstate, overseas, or foreign air commerce.

"Aircraft" means a device that is used or intended to be used for flight in the air.

"Aircraft engine" means an engine that is used or intended to be used for propelling aircraft. It includes turbosuperchargers, appurtenances, and accessories necessary for its functioning, but does not include propellers.

"Airframe" means the fuselage, booms, nacelles, cowlings, fairings, airfoil surfaces (including rotors but excluding propellers and rotating airfoils of engines), and landing gear of an aircraft and their accessories and controls.

"Airplane" means an engine-driven fixed-wing aircraft heavier than air, that is supported in flight by the dynamic reaction of the air against its wings.

"Airport" means an area of land or water that is used or intended to be used for the landing and takeoff of aircraft, and includes its buildings and facilities, if any.

"Airport traffic area" means, unless otherwise specifically designated in Part 93, that airspace within a horizontal radius of 5 statute miles from the geographical center of any airport at which a control tower is operating, extending from the surface up to, but not including, an altitude of 3,000 feet above the elevation of the airport.

"Airship" means an engine-driven lighter-than-air aircraft that can be steered.

"Air traffic" means aircraft operating in the air or on an airport surface, exclusive of loading ramps and parking areas.

"Air traffic clearance" means an authorization by air traffic control, for the purpose of preventing collision between known aircraft, for an aircraft to proceed under specified traffic conditions within controlled airspace.

"Air traffic control" means a service operated by appropriate authority to promote the safe, orderly, and expeditious flow of air traffic.

"Air transportation" means interstate, overseas, or foreign air transportation or the transportation of mail by aircraft.

"Alternate airport" means an airport at which an aircraft may land if a landing at the intended airport becomes inadvisable.

"Altitude engine" means a reciprocating aircraft engine having a rated takeoff power that is producible from sea level to an established higher altitude.

"Appliance" means any instrument, mechanism, equipment, part, apparatus, appurtenance, or accessory, including communications equipment, that is used or intended to be used in operating or controlling an aircraft in flight, is installed in or attached to the aircraft, and is not part of an airframe, engine, or propeller.

"Approved", unless used with reference to another person, means approved by the Administrator.

"Area navigation (RNAV)" means a method of navigation that permits aircraft operations on any desired course within the coverage of station-referenced navigation signals or within the limits of self-contained system capability.

"Area navigation high route" means an area navigation route within the airspace extending upward from, and including, 18,000 feet MSL to flight level 450.

"Area navigation low route" means an area navigation route within the airspace extending upward from 1,200 feet above the surface of the earth to, but not including 18,000 feet MSL.

"Armed Forces" means the Army, Navy, Air Force, Marine Corps, and Coast Guard, including their regular and reserve components and members serving without component status.

"Autorotation" means a rotorcraft flight condition in which the lifting rotor is driven entirely by action of the air when the rotorcraft is in motion.

"Auxiliary rotor" means a rotor that serves either to counteract the effect of the main rotor torque on a rotorcraft or to maneuver the rotorcraft about one or more of its three principal axes.

"Balloon" means a lighter-than-air aircraft that is not engine driven.

"Brake horsepower" means the power delivered at the propeller shaft (main drive or main output) of an aircraft engine.

"Calibrated airspeed" means indicated airspeed of an aircraft, corrected for position and instrument error. Calibrated airspeed is equal to true airspeed in standard atmosphere at sea level.

"Category"—

(1) As used with respect to the certification, ratings, privileges, and limitations of airmen, means a broad classification of aircraft. Examples include: airplane; rotorcraft; glider; and lighter-than-air; and

(2) As used with respect to the certification of aircraft, means a grouping of aircraft based upon intended use or operating limitations. Examples include: transport; normal; utility; acrobatic; limited; restricted; and provisional.

"Category II operation", with respect to the operation of aircraft, means a straight-in ILS approach to the runway of an airport under a Category II ILS instrument approach procedure issued by the Administrator or other appropriate authority.

["Category III operations", with respect to the operation of aircraft, means an ILS approach to, and landing on, the runway of an airport using a Category III ILS instrument approach procedure issued by the Administrator or other appropriate authority.]

"Ceiling" means the height above the earth's surface of the lowest layer of clouds or obscuring phenomena that is reported as "broken", "overcast", or "obscuration", and not classified as "thin" or "partial".

"Civil aircraft" means aircraft other than public aircraft.

"Class"—

(1) As used with respect to the certification, ratings, privileges, and limitations of airmen, means a classification of aircraft within a category having similar operating characteristics. Examples include: single engine; multiengine; land; water; gyroplane; helicopter; airship; and free balloon; and

(2) As used with respect to the certification of aircraft, means a broad grouping of aircraft having similar characteristics of propulsion, flight, or landing. Examples include: airplane; rotorcraft; glider; balloon; landplane; and seaplane.

"Clearway" means:

(1) For turbine engine powered airplanes certificated after August 29, 1959, an area beyond the runway, not less than 500 feet wide, centrally located about the extended centerline of the runway, and under the control of the airport authorities. The clearway is expressed in terms of a clearway plane, extending from the end of the runway with an upward slope not exceeding 1.25 percent, above which no object nor any terrain protrudes. However, threshold lights may protrude above the

plane if their height above the end of the runway is 26 inches or less and if they are located to each side of the runway.

(2) For turbine engine powered airplanes certificated after September 30, 1958 but before August 30, 1959, an area beyond the takeoff runway extending no less than 300 feet on either side of the extended centerline of the runway, at an elevation no higher than the elevation of the end of the runway, clear of all fixed obstacles, and under the control of the airport authorities.

"Commercial operator" means a person who, for compensation or hire, engages in the carriage by aircraft in air commerce of persons or property, other than as an air carrier or foreign air carrier or under the authority of Part 375 of this Title. Where it is doubtful that an operation is for "compensation or hire", the test applied is whether the carriage by air is merely incidental to the person's other business or is, in itself, a major enterprise for profit.

"Controlled airspace" means airspace designated as a continental control area, control area, control zone, terminal control area, or transition area, within which some or all aircraft may be subject to air traffic control.

"Crewmember" means a person assigned to perform duty in an aircraft during flight time.

"Critical altitude" means the maximum altitude at which, in standard atmosphere, it is possible to maintain, at a specified rotational speed, a specified power or a specified manifold pressure. Unless otherwise stated, the critical altitude is the maximum altitude at which it is possible to maintain, at the maximum continuous rotational speed, one of the following:

(1) The maximum continuous power, in the case of engines for which this power rating is the same at sea level and at the rated altitude.

(2) The maximum continuous rated manifold pressure, in the case of engines, the maximum continuous power of which, is governed by a constant manifold pressure.

"Critical engine" means the engine whose failure would most adversely affect the performance or handling qualities of an aircraft.

"Decision height", with respect to the operation of aircraft, means the height at which a decision must be made, during an ILS or PAR instrument approach, to either continue the approach or to execute a missed approach.

"Equivalent airspeed" means the calibrated airspeed of an aircraft corrected for adiabatic compressible flow for the particular altitude. Equivalent airspeed is equal to calibrated airspeed in standard atmosphere at sea level.

"Extended over-water operation" means—

(1) With respect to aircraft other than helicopters, and operation over water at a horizontal distance of more than 50 nautical miles from the nearest shoreline; and

(2) With respect to helicopters, an operation over water at a horizontal distance of more than 50 nautical miles from the nearest shoreline and more than 50 nautical miles from an off-shore heliport structure.

"External load" means a load that is carried, or extends, outside of the aircraft fuselage.

"External-load attaching means" means the structural components used to attach an external load to an aircraft, including external-load containers, the backup structure at the attachment points, and any quick-release device used to jettison the external load.

"Fireproof"—

(1) With respect to materials and parts used to confine fire in a designated fire zone, means the capacity to withstand at least as well as steel in dimensions appropriate for the purpose for which they are used, the heat produced when there is a severe fire of extended duration in that zone; and

(2) With respect to other materials and parts, means the capacity to withstand the heat associated with fire at least as well as steel in dimensions appropriate for the purpose for which they are used.

"Fire resistant"—

(1) With respect to sheet or structural members means the capacity to withstand the heat associated with fire at least as well as aluminum alloy in dimensions appropriate for the purpose for which they are used; and

(2) With respect to fluid-carrying lines, fluid system parts, wiring, air ducts, fittings, and powerplant controls, means the capacity to perform the intended functions under the heat and other conditions likely to occur when there is a fire at the place concerned.

"Flame resistant" means not susceptible to combustion to the point of propagating a flame, beyond safe limits, after the ignition source is removed.

"Flammable", with respect to a fluid or gas, means susceptible to igniting readily or to exploding.

"Flap extended speed" means the highest speed permissible with wing flaps in a prescribed extended position.

"Flash resistant" means not susceptible to burning violently when ignited.

"Flight crewmember" means a pilot, flight engineer, or flight navigator assigned to duty in an aircraft during flight time.

"Flight level" means a level of constant atmospheric pressure related to a reference datum of 29.92 inches of mercury. Each is stated in three digits that represent hundreds of feet. For example, flight level 250 represents a barometric altimeter indication of 25,000 feet: flight level 255, an indication of 25,500 feet.

"Flight plan" means specified information, relating to the intended flight of an aircraft, that is filed orally or in writing with air traffic control.

"Flight time" means the time from the moment the aircraft first moves under its own power for the purpose of flight until the moment it comes to rest at the next point of landing. ("Block-to-block" time.)

"Flight visibility" means the average forward horizontal distance, from the cockpit of an aircraft in flight, at which prominent unlighted objects may be seen and identified by day and prominent lighted objects may be seen and identified by night.

"Foreign air carrier" means any person other than a citizen of the United States, who undertakes directly, by lease or other arrangement, to engage in air transportation.

"Foreign air commerce" means the carriage by aircraft of persons or property for compensation or hire, or the carriage of mail by aircraft, or the operation or navigation of aircraft in the conduct or furtherance of a business or vocation, in commerce between a place in the United States and any place outside thereof; whether such commerce moves wholly by aircraft or partly by aircraft and partly by other forms of transportation.

"Foreign air transportation" means the carriage by aircraft of persons or property as a common carrier for compensation or hire, or the carriage of mail by aircraft, in commerce between a place in the United States and any place outside of the United States, whether that commerce moves wholly by aircraft or partly by aircraft and partly by other forms of transportation.

"Glider" means a heavier-than-air aircraft, that is supported in flight by the dynamic reaction of the air against its lifting surfaces and whose free flight does not depend principally on an engine.

"Ground visibility" means prevailing horizontal visibility near the earth's surface as reported by the United States National Weather Service or an accredited observer.

"Gyrodyne" means a rotorcraft whose rotors are normally engine-driven for takeoff, hovering, and landing, and for forward flight through part of its speed range, and whose means of propulsion, consisting usually of conventional propellers, is independent of the rotor system.

"Gyroplane" means a rotorcraft whose rotors are not engine-driven except for initial starting, but are made to rotate by action of the air when the rotorcraft is moving; and whose means of propulsion, consisting usually of conventional propellers, is independent of the rotor system.

"Helicopter" means a rotorcraft that, for its horizontal motion, depends principally on its engine-driven rotors.

"Heliport" means an area of land, water, or structure used or intended to be used for the landing and takeoff of helicopters.

"Idle thrust" means the jet thrust obtained with the engine power control lever set at the stop for the least thrust position at which it can be placed.

"IFR conditions" means weather conditions below the minimum for flight under visual flight rules.

"IFR over-the-top", with respect to the operation of aircraft, means the operation of an aircraft over-the-top on an IFR flight plan when cleared by air traffic control to maintain "VFR conditions" or "VFR conditions on top".

"Indicated airspeed" means the speed of an aircraft as shown on its pitot static airspeed indicator calibrated to reflect standard atmosphere adiabatic compressible flow at sea level uncorrected for airspeed system errors.

"Instrument" means a device using an internal mechanism to show visually or aurally the attitude, altitude, or operation of an aircraft or aircraft part. It includes electronic devices for automatically controlling an aircraft in flight.

"Interstate air commerce" means the carriage by aircraft of persons or property for compensation or hire, or the carriage of mail by aircraft, or the operation or navigation of aircraft in the conduct or furtherance of a business or vocation, in commerce between a place in any State of the United States, or the District of Columbia, and a place in any other State of the United States, or the District of Columbia: or between places in the same State of the United States through the airspace over any place outside thereof; or between places in the same territory or possession of the United States, or the District of Columbia.

"Interstate air transportation" means the carriage by aircraft of persons or property as a common carrier for compensation or hire, or the carriage of mail by aircraft, in commerce—

(1) Between a place in a State or the District of Columbia and another place in another State or the District of Columbia;

(2) Between places in the same State through the airspace of any place outside that State; or

(3) Between places in the same possession of the United States;

whether that commerce moves wholly by aircraft or partly by aircraft and partly by other forms of transportation.

["Intrastate air transportation" means the carriage of persons or property as a common carrier for compensation or hire, by turbojet-powered aircraft capable of carrying thirty or more persons, wholly within the same State of the United States.]

"Kite" means a framework, covered with paper, cloth, metal, or other material, intended to be flown at the end of a rope or cable, and having as its only support the force of the wind moving past its surfaces.

"Landing gear extended speed" means the maximum speed at which an aircraft can be safely flown with the landing gear extended.

"Landing gear operating speed" means the maximum speed at which the landing gear can be safely extended or retracted.

"Large aircraft" means aircraft of more than 12,500 pounds, maximum certificated takeoff weight.

"Lighter-than-air aircraft" means aircraft that can rise and remain suspended by using contained gas weighing less than the air that is displaced by the gas.

"Load factor" means the ratio of a specified load to the total weight of the aircraft. The specified load is expressed in terms of any of the following: aerodynamic forces, inertia forces, or ground or water reactions.

"Mach number" means the ratio of true airspeed to the speed of sound.

"Main rotor" means the rotor that supplies the principal lift to a rotorcraft.

"Maintenance" means inspection, overhaul, repair, preservation, and the replacement of parts, but excludes preventive maintenance.

"Major alteration" means an alteration not listed in the aircraft, aircraft engine, or propeller specifications—

(1) That might appreciably affect weight, balance, structural strength, performance, powerplant operation, flight characteristics, or other qualities affecting airworthiness; or

(2) That is not done according to accepted practices or cannot be done by elementary operations.

"Major repair" means a repair—

(1) That, if improperly done, might appreciably affect weight, balance, structural strength, performance, powerplant operation, flight characteristics, or other qualities affecting airworthiness; or

(2) That is not done according to accepted practices or cannot be done by elementary operations.

"Manifold pressure" means absolute pressure as measured at the appropriate point in the induction system and usually expressed in inches of mercury.

"Medical certificate" means acceptable evidence of physical fitness on a form prescribed by the Administrator.

"Minimum descent altitude" means the lowest altitude, expressed in feet above mean sea level, to which descent is authorized on final approach or during circle-to-land maneuvering in execution of a standard instrument approach procedure, where no electronic glide slope is provided.

"Minor alteration" means an alteration other than a major alteration.

"Minor repair" means a repair other than a major repair.

"Navigable airspace" means airspace at and above the minimum flight altitudes prescribed by or under this chapter, including airspace needed for safe takeoff and landing.

"Night" means the time between the end of evening civil twilight and the beginning of morning civil twilight, as published in the American Air Almanac, converted to local time.

"Non-precision approach procedure" means a standard instrument approach procedure in which no electronic glide slope is provided.

"Operate," with respect to aircraft, means use, cause to use or authorize to use aircraft, for the purpose (except as provided in § 91.10 of this chapter) of air navigation including the piloting of aircraft, with or without the right of legal control (as owner, lessee, or otherwise).

"Operational control", with respect to a flight, means the exercise of authority over initiating, conducting, or terminating a flight.

"Overseas air commerce" means the carriage by aircraft of persons or property for compensation or hire, or the carriage of mail by aircraft, or the operation or navigation of aircraft in the conduct or furtherance of a business or vocation, in commerce between a place in any State of the United States, or the District of Columbia, and any place in a territory or possession of the United States; or between a place in a territory or possession of the United States, and a place in any other territory or possession of the United States.

"Overseas air transportation" means the carriage by aircraft of persons or property as a common carrier for compensation or hire, or the carriage of mail by aircraft, in commerce—

(1) Between a place in a State or the District of Columbia and a place in a possession of the United States; or

(2) Between a place in a possession of the United States and a place in another possession of the United States;

whether that commerce moves wholly by aircraft or partly by aircraft and partly by other forms of transportation.

"Over-the-top" means above the layer of clouds or other obscuring phenomena forming the ceiling.

"Parachute" means a device used or intended to be used to retard the fall of a body or object through the air.

"Person" means an individual, firm, partnership, corporation, company, association, joint-stock association, or governmental entity. It includes a trustee, receiver, assignee, or similar representative of any of them.

"Pilotage" means navigation by visual reference to landmarks.

"Pilot in command" means the pilot responsible for the operation and safety of an aircraft during flight time.

"Pitch setting" means the propeller blade setting as determined by the blade angle measured in a manner, and at a radius, specified by the instruction manual for the propeller.

"Positive control" means control of all air traffic, within designated airspace, by air traffic control.

"Precision approach procedure" means a standard instrument approach procedure in which an electronic glide slope is provided, such as ILS and PAR.

"Preventive maintenance" means simple or minor preservation operations and the replacement of small standard parts not involving complex assembly operations.

"Prohibited area" means designated airspace within which the flight of aircraft is prohibited.

"Propeller" means a device for propelling an aircraft that has blades on an engine-driven shaft and that, when rotated, produces by its action on the air, a thrust approximately perpendicular to its plane of rotation. It includes control components normally supplied by its manufacturer, but does not include main and auxiliary rotors or rotating airfoils of engines.

"Public aircraft" means aircraft used only in the service of a government, or a political subdivision. It does not include any government-owned aircraft engaged in carrying persons or property for commercial purposes.

"Rated maximum continuous augmented thrust", with respect to turbojet engine type certification, means the approved jet thrust that is developed statically or in flight, in standard atmosphere at a specified altitude, with fluid injection or with the burning of fuel in a separate combustion chamber, within the engine operating limitations established under Part 33 of this chapter, and approved for unrestricted periods of use.

"Rated maximum continuous power", with respect to reciprocating, turbopropeller, and turboshaft engines, means the approved brake horsepower that is developed statically or in flight, in standard atmosphere at a specified altitude, within the engine operating limitations established under Part 33, and approved for unrestricted periods of use.

"Rated maximum continuous thrust", with respect to turbojet engine type certification, means the approved jet thrust that is developed statically or in flight, in standard atmosphere at a specified altitude, without fluid injection and without the burning of fuel in a separate combustion chamber, within the engine operating limitations established under Part 33 of this chapter, and approved for unrestricted periods of use.

"Rated takeoff augmented thrust", with respect to turbojet engine type certification, means the approved jet thrust that is developed statically under standard sea level conditions, with fluid injection or with the burning of fuel in a separate combustion chamber, within the engine operating limitations established under Part 33 of this chapter, and limited in use to periods of not over 5 minutes for takeoff operation.

"Rated takeoff power", with respect to reciprocating, turbopropeller, and turboshaft engine type certification, means the approved brake horsepower that is developed statically under standard sea level conditions, within the engine operating limitations established under Part 33, and limited in use to periods of not over 5 minutes for takeoff operation.

"Rated takeoff thrust", with respect to turbojet engine type certification, means the approved jet thrust that is developed statically under standard sea level conditions, without fluid injection and without the burning of fuel in a separate combustion chamber, within the engine operating limitations established under Part 33 of this chapter, and limited in use to periods of not over 5 minutes for takeoff operation.

"Rated 30-minute power", with respect to helicopter turbine engines, means the maximum brake horsepower, developed under static conditions at specified altitudes and atmospheric temperatures, under the maximum conditions of rotor shaft rotational speed and gas temperature, and limited in use to periods of not over 30 minutes as shown on the engine data sheet.

"Rated 2½-minute power", with respect to helicopter turbine engines, means the brake horsepower, developed statically in standard atmosphere at sea level, or at a specified altitude, for one-engine-out operation of multiengine helicopters for 2½ minutes at rotor shaft rotation speed and gas temperature established for this rating.

"Rating" means a statement that, as a part of a certificate, sets forth special conditions, privileges, or limitations.

"Reporting point" means a geographical location in relation to which the position of an aircraft is reported.

"Restricted area" means airspace designated under Part 73 of this chapter within which the flight of aircraft, while not wholly prohibited, is subject to restriction.

"RNAV way point (W/P)" means a predetermined geographical position used for route or instrument approach definition or progress reporting purposes that is defined relative to a VORTAC station position.

"Rocket" means an aircraft propelled by ejected expanding gases generated in the engine from self-contained propellants and not dependent on the intake of outside substances. It includes any part which becomes separated during the operation.

"Rotorcraft" means a heavier-than-air aircraft that depends principally for its support in flight on the lift generated by one or more rotors.

"Rotorcraft-load combination" means the combination of a rotorcraft and an external load, including the external load attaching means. Rotorcraft-load combinations are designated as Class A, Class B, and Class C, as follows:

(1) "Class A rotorcraft-load combination" means one in which the external load cannot move freely, cannot be jettisoned, and does not extend below the landing gear.

(2) "Class B rotorcraft-load combination" means one in which the external load is jettisonable and is lifted free of land or water during the rotorcraft operation.

(3) "Class C rotorcraft-load combination" means one in which the external load is jettisonable and remains in contact with land or water during the rotorcraft operation.

"Route segment" means a part of a route. Each end of that part is identified by—

(1) a continental or insular geographical location; or

(2) a point at which a definite radio fix can be established.

["Sea level engine" means a reciprocating aircraft engine having a rated takeoff power that is producible only at sea level.]

"Second in command" means a pilot who is designated to be second in command of an aircraft during flight time.

"Show", unless the context otherwise requires, means to show to the satisfaction of the of the Administrator.

"Small aircraft" means aircraft of 12,500 pounds or less, maximum certificated takeoff weight.

"Standard atmosphere" means the atmosphere defined in *U.S. Standard Atmosphere, 1962* (Geopotential altitude tables).

"Stopway" means an area beyond the takeoff runway, no less wide than the runway and centered upon the extended centerline of the runway, able to support the airplane during an aborted takeoff, without causing structural damage to the airplane, and designated by the airport authorities for use in decelerating the airplane during an aborted takeoff.

"Takeoff power"—

(1) With respect to reciprocating engines, means the brake horsepower that is developed under standard sea level conditions, and under the maximum conditions of crankshaft rotational speed and engine manifold pressure approved for the normal takeoff, and limited in continuous use to the period of time shown in the approved engine specification; and

(2) With respect to turbine engines, means the brake horsepower that is developed under static conditions at a specified altitude and atmospheric temperature, and under the maximum conditions of rotorshaft rotational speed and gas temperature approved for the normal take-

off, and limited in continuous use to the period of time shown in the approved engine specification.

"Takeoff thrust", with respect to turbine engines, means the jet thrust that is developed under static conditions at a specific altitude and atmospheric temperature under the maximum conditions of rotorshaft rotational speed and gas temperature approved for the normal takeoff, and limited in continuous use to the period of time shown in the approved engine specification.

"Time in service", with respect to maintenance time records, means the time from the moment an aircraft leaves the surface of the earth until it touches it at the next point of landing.

"Traffic pattern" means the traffic flow that is prescribed for aircraft landing at, taxiing on, or taking off from, an airport.

"True airspeed" means the airspeed of an aircraft relative to undisturbed air. True airspeed is equal to equivalent airspeed multiplied by $(po/p)^{1/2}$.

"Type"—

(1) As used with respect to the certification, ratings, privileges, and limitations of airmen, means a specific make and basic model of aircraft, including modifications thereto that do not change its handling or flight characteristics. Examples include: DC-7, 1049, and F-27; and

(2) As used with respect to the certification of aircraft, means those aircraft which are similar in design. Examples include: DC-7 and DC-7C; 1049G and 1049H; and F-27 and F-27F.

(3) As used with respect to the certification of aircraft engines means those engines which are similar in design. For example, JT8D and JT8D-7 are engines of the same type, and JT9D-3A and JT9D-7 are engines of the same type.

"United States", in a geographical sense, means (1) the States, the District of Columbia, Puerto Rico, and the possessions, including the territorial waters, and (2) the airspace of those areas.

"United States air carrier" means a citizen of the United States who undertakes directly by lease, or other arrangement, to engage in air transportation.

"VFR over-the-top", with respect to the operation of aircraft, means the operation of an aircraft over-the-top under VFR when it is not being operated on an IFR flight plan.

§ 1.2 Abbreviations and symbols.

In Subchapters A through K of this chapter:

["AGL" means above ground level.]

"ALS" means approach light system.

"ASR" means airport surveillance radar.

"ATC" means air traffic control.

"CAS" means calibrated airspeed.

"CAT II" means Category II.

"CONSOL or CONSOLAN" means a kind of low or medium frequency long range navigational aid.

"DH" means decision height.

"DME" means distance measuring equipment compatible with TACAN.

"EAS" means equivalent airspeed.

"FAA" means Federal Aviation Administration.

"FM" means fan marker.

"GS" means glide slope.

"HIRL" means high-intensity runway light system.

"IAS" means indicated airspeed.

"ICAO" means International Civil Aviation Organization.

"IFR" means instrument flight rules.

"ILS" means instrument landing system.

"IM" means ILS inner marker.

"INT" means intersection.

"LDA" means localizer-type directional aid.

"LFR" means low frequency radio range.

"LMM" means compass locator at middle marker.

"LOC" means ILS localizer.

"LOM" means compass locator at outer marker.

"*M*" means mach number.

§ 1.3 Rules of construction.

(a) In Subchapters A through K of this chapter, unless the context requires otherwise:

(1) Words importing the singular include the plural;

(2) Words importing the plural include the singular; and

(3) Words importing the masculine gender include the feminine.

(b) In Subchapters A through K of this chapter, the word:

(1) "Shall" is used in an imperative sense;

(2) "May" is used in a permissive sense to state authority or permission to do the act prescribed, and the words "no person may . . ." or "a person may not . . ." mean that no person is required, authorized, or permitted to do the act prescribed; and

(3) "Includes" means "includes but is not limited to".

(Authority: §§ 1.1 to 1.3 issued under sec. 313(a) of the Federal Aviation Act of 1958 (49 U.S.C. 1354(a)).

TECHNICAL INFORMATION SUPPLEMENT #3 - Advisory Circulars

Advisory circulars can be numbered the same as the FAR part if they pertain specifically to that part.

EXAMPLE: AC 43.13-1A pertains to FAR Part 43.13

Advisory circulars vary from one page to books with hundreds of pages. The advisory circular checklist is published by the FAA three times a year or as needed.

GENERAL
G103 FUNDAMENTALS OF REGULATIONS, PUBLICATIONS, AND RECORDS
SELECT AND USE REGULATIONS, PUBLICATIONS, AND RECORDS
G103-A

TECHNICAL INFORMATION SUPPLEMENT #4 - Type Certificates

Any person wanting to manufacture and sell an aircraft, aircraft engine or propeller must make application according to FAR Part 21. To meet this approval by the FAA minimum standards are set according to the following FAR parts:

FAR PART 23 contains the specifications for the design, performance, and testing of airplanes which seat up to nine or less passengers. There are three categories in which an airplane may be certificated: normal, utility, and acrobatic. They may be certificated in more than one if desired.

FAR PART 25 gives the minimum standards for transport category aircraft.

FAR PART 27 gives the minimum standards for normal category rotorcraft with maximum weights of 6000 pounds or less.

FAR PART 29 gives the minimum standards for transport category rotorcraft.

FAR PART 31 gives the minimum standards for manned free balloons.

FAR PART 33 gives the minimum standards for certification of reciprocating and turbine engines.

FAR PART 35 gives the minimum standards for propellers.

The manufacturer of an aircraft, aircraft engine, or propeller must provide the FAA with all the pertinent specifications of that product. If the minimum standards set forth in the applicable part of the FARs are met, a type certificate is issued and a type certificate data sheet is published. This permits the manufacturer to apply for a production certificate and manufacture that particular aircraft, aircraft engine, or propeller.

TECHNICAL INFORMATION SUPPLEMENT #5 - Type Certificate Data Sheets

Type certificate data sheets (TCDS') are printed by the United States Government Printing Office and are available to the public on a subscription basis. TCDS' contain the official specifications for type certificated aircraft, aircraft engines, and propellers.

The type certificate data sheet is part of the type certificate and contains specific information pertaining to how that product meets the standards. It also specifies which standards apply to that product. The technician will make extensive use of this item to see that the aircraft conforms to its certified design.

A master index is published for all the type certificate data sheets and specifications found in all six volumes. They are listed in alphabetical order under the name of the current type certificate holder. The index is cross-referenced to assist in locating a specific data sheet or specification that has been transferred to a person other than the original manufacturer.

Supplements containing newly issued data sheets and revisions to existing ones are issued monthly. The revision number will appear on the data sheet or specification just to the right of the type certificate number in the upper right hand corner of the TCDS; also, the date it was revised will be at the bottom of this block of information. (See number one)

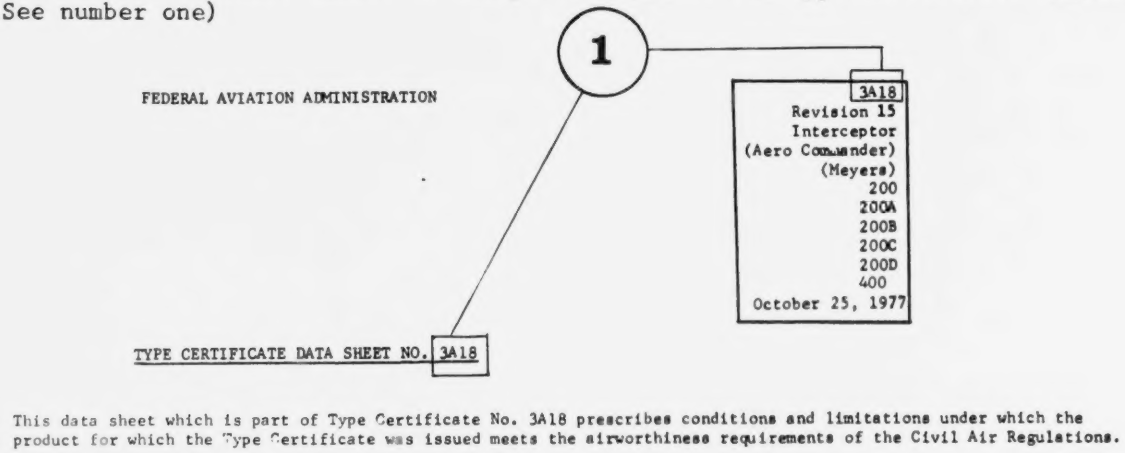
EXAMPLE: P26EA-4 Last digit "4" means the fourth revision.

TCDS' are not printed following a standard format, but do contain general classification sections of information, especially in the aircraft data sheets. Following are sample type certificate data sheets for aircraft, propellers, turbine engines, and reciprocating engines. General classification sections for each are identified by numbers "one" through "8".

TECHNICAL INFORMATION SUPPLEMENT #5

A. Aircraft

The type certificate number is located in the upper right hand corner of the TCDS. The data sheet number is always the same as the type certificate number. (See number one)



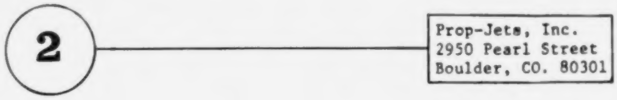
FEDERAL AVIATION ADMINISTRATION

3A18
Revision 15
Interceptor
(Aero Commander)
(Meyers)
200
200A
200B
200C
200D
400
October 25, 1977

TYPE CERTIFICATE DATA SHEET NO. 3A18

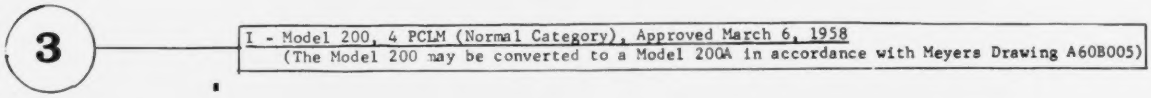
This data sheet which is part of Type Certificate No. 3A18 prescribes conditions and limitations under which the product for which the Type Certificate was issued meets the airworthiness requirements of the Civil Air Regulations.

The TCDS also identifies the name and address of the type certificate holder. (See number 2)



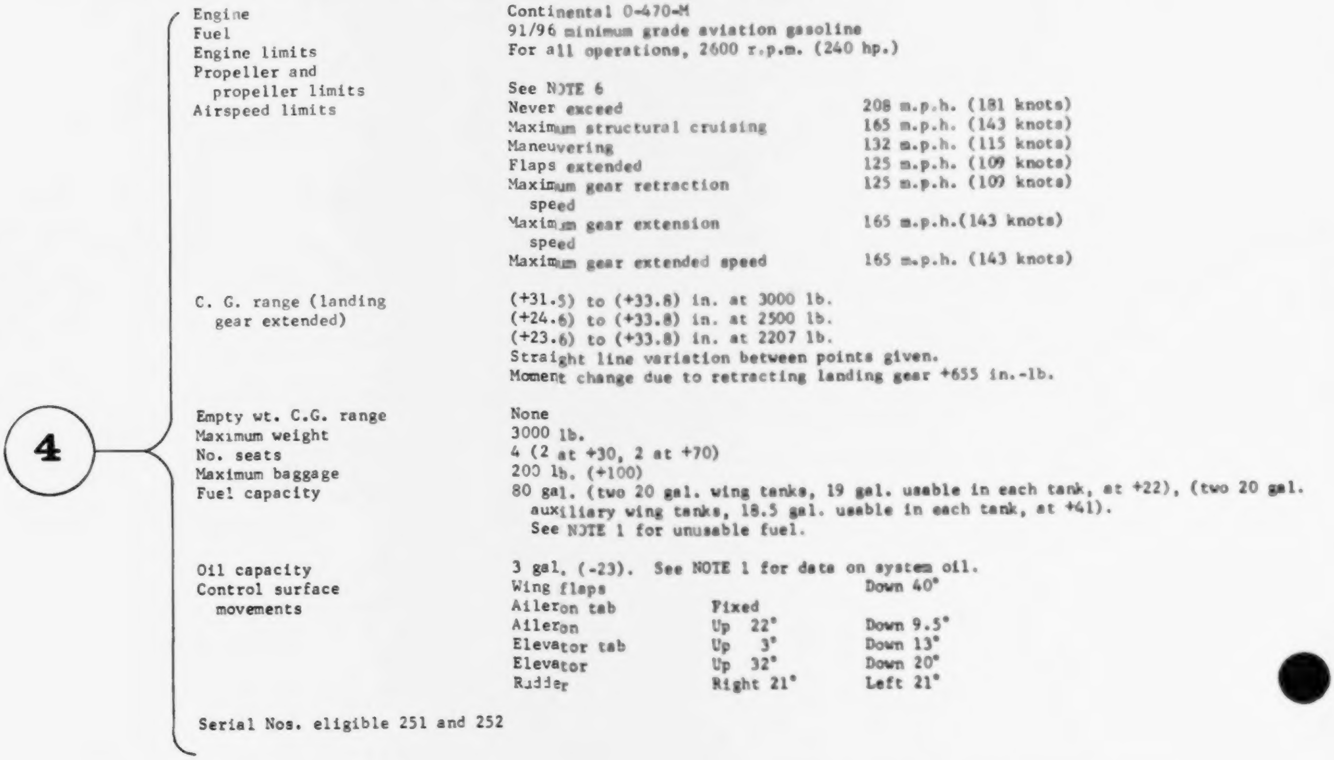
Prop-Jets, Inc.
2950 Pearl Street
Boulder, CO. 80301

The specific aircraft model, a brief description of the aircraft, and an approval date are also included in the TCDS. (See number 3)



I - Model 200, 4 PCLM (Normal Category), Approved March 6, 1958
(The Model 200 may be converted to a Model 200A in accordance with Meyers Drawing A60B005)

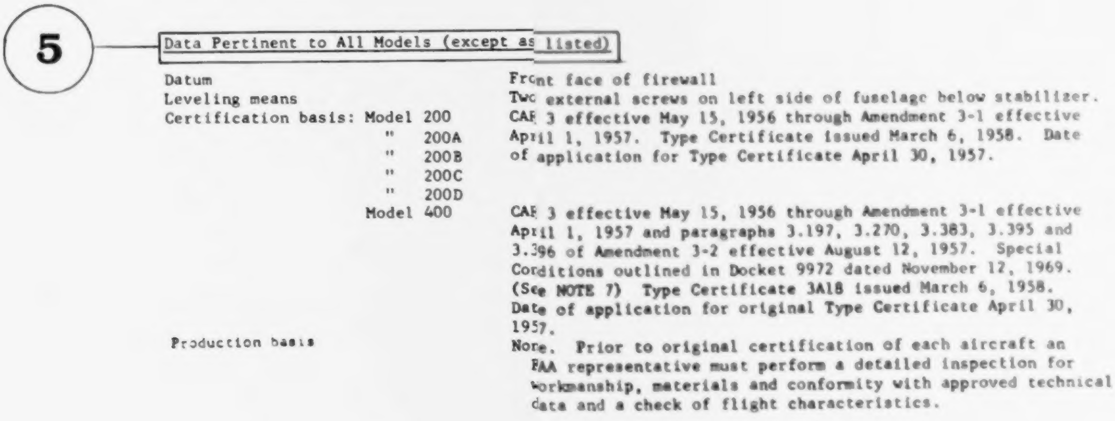
The TCDS also contains other aircraft specifications applicable only to the aircraft model stated on the TCDS. (See number 4)



4

Engine	Continental 0-470-M		
Fuel	91/96 minimum grade aviation gasoline		
Engine limits	For all operations, 2600 r.p.m. (240 hp.)		
Propeller and propeller limits	See NOTE 6		
Airspeed limits	Never exceed		208 m.p.h. (181 knots)
	Maximum structural cruising		165 m.p.h. (143 knots)
	Maneuvering		132 m.p.h. (115 knots)
	Flaps extended		125 m.p.h. (109 knots)
	Maximum gear retraction speed		125 m.p.h. (109 knots)
	Maximum gear extension speed		165 m.p.h.(143 knots)
	Maximum gear extended speed		165 m.p.h. (143 knots)
C. G. range (landing gear extended)	(+31.5) to (+33.8) in. at 3000 lb. (+24.6) to (+33.8) in. at 2500 lb. (+23.6) to (+33.8) in. at 2207 lb. Straight line variation between points given. Moment change due to retracting landing gear +655 in.-lb.		
Empty wt. C.G. range	None		
Maximum weight	3000 lb.		
No. seats	4 (2 at +30, 2 at +70)		
Maximum baggage	200 lb. (+100)		
Fuel capacity	80 gal. (two 20 gal. wing tanks, 19 gal. usable in each tank, at +22), (two 20 gal. auxiliary wing tanks, 18.5 gal. usable in each tank, at +41). See NOTE 1 for unusable fuel.		
Oil capacity	3 gal. (-23). See NOTE 1 for data on system oil.		
Control surface movements	Wing flaps		Down 40°
	Aileron tab	Fixed	
	Aileron	Up 22°	Down 9.5°
	Elevator tab	Up 3°	Down 13°
	Elevator	Up 32°	Down 20°
	Rudder	Right 21°	Left 21°
Serial Nos. eligible 251 and 252			

The section "Data Pertinent to All Models" usually contains the location of the datum, the aircraft leveling means, and the basis for certification and production. (See number 5)



5

Data Pertinent to All Models (except as listed)

Datum	Front face of firewall
Leveling means	Two external screws on left side of fuselage below stabilizer.
Certification basis: Model 200 " 200A " 200B " 200C " 200D	CAR 3 effective May 15, 1956 through Amendment 3-1 effective April 1, 1957. Type Certificate issued March 6, 1958. Date of application for Type Certificate April 30, 1957.
Model 400	CAR 3 effective May 15, 1956 through Amendment 3-1 effective April 1, 1957 and paragraphs 3.197, 3.270, 3.383, 3.395 and 3.396 of Amendment 3-2 effective August 12, 1957. Special Conditions outlined in Docket 9972 dated November 12, 1969. (See NOTE 7) Type Certificate 3A18 issued March 6, 1958. Date of application for original Type Certificate April 30, 1957.
Production basis	None. Prior to original certification of each aircraft an FAA representative must perform a detailed inspection for workmanship, materials and conformity with approved technical data and a check of flight characteristics.

TECHNICAL INFORMATION SUPPLEMENT #5

The "Equipment" section lists the required and approved optional aircraft equipment, equipment weight, and the location of the equipment from the datum. (See number 6)

⑥

Equipment: The basic required equipment as prescribed in the applicable airworthiness regulations (see Certification Basis) must be installed in the aircraft for certification. In addition, the following items of equipment are required:

1. Prestall warning indicator, Safe Flight Instrument Corp. 1-02-000 (Models 200, 200A, 200B, 200C and 200D)
2. (a) Model 200 FAA Approved Airplane Flight Manual dated March 6, 1958
   (b) Model 200A FAA Approved Airplane Flight Manual dated June 18, 1959
   (c) Model 200B FAA Approved Airplane Flight Manual dated March 9, 1961
   (d) Model 200C FAA Approved Airplane Flight Manual dated September 12, 1963
   (e) Model 200D FAA Approved Airplane Flight Manual dated November 25, 1964
   (f) Model 400 FAA Approved Airplane Flight Manual dated August 11, 1971
3. Model 400
   (a) Stall warning indicator, Interceptor drawing D69B031.
   (b) See Interceptor Report 60M018 for additional equipment.

Listed under the "Notes" section are any special conditions, flight manuals required, placards needed, information about unusable fuel and oil, and other special notices. (See number 7)

⑦

NOTE 1. Current weight and balance report with list of equipment included in certificated empty weight, and loading instructions when necessary must be provided for each aircraft at time of original certification.

Models 200, 200A, 200B, 200C and 200D: The certificated empty weight and corresponding center of gravity location must include system oil of 1 lb. at -23, and unusable fuel of 18 lb. at +22, with standard wing tanks. Include additional unusable fuel at 18 lb. at -41 when auxiliary wing tanks are installed (Models 200A, 200B, 200C and 200D).

Model 400: The certificated empty weight and corresponding center of gravity location must include system oil of 5.6 lb at -40.5, and unusable fuel of 69.7 lb. at +40.5.

NOTE 2. The following placard must be displayed on the right side of the instrument panel in clear view of the pilot:

Models 200, 200A, 200B, 200C and 200D: "THIS AIRPLANE MUST BE OPERATED AS A NORMAL CATEGORY AIRPLANE IN COMPLIANCE WITH THE OPERATING LIMITATIONS STATED IN THE FORM OF PLACARDS, MARKINGS, AND MANUALS."

TECHNICAL INFORMATION SUPPLEMENT #5

1

3A18
Revision 15
Interceptor
(Aero Commander)
(Meyers)
200
200A
200B
200C
200D
400
October 25, 1977

FEDERAL AVIATION ADMINISTRATION

TYPE CERTIFICATE DATA SHEET NO. 3A18

This data sheet which is part of Type Certificate No. 3A18 prescribes conditions and limitations under which the product for which the Type Certificate was issued meets the airworthiness requirements of the Civil Air Regulations.

2 Type Certificate Holder

Prop-Jets, Inc.
2950 Pearl Street
Boulder, CO. 80301

3 I - Model 200, 4 PCLM (Normal Category), Approved March 6, 1958
(The Model 200 may be converted to a Model 200A in accordance with Meyers Drawing A60B005)

4

Engine	Continental 0-470-M		
Fuel	91/96 minimum grade aviation gasoline		
Engine limits	For all operations, 2600 r.p.m. (240 hp.)		
Propeller and propeller limits	See NOTE 6		
Airspeed limits	Never exceed		208 m.p.h. (181 knots)
	Maximum structural cruising		165 m.p.h. (143 knots)
	Maneuvering		132 m.p.h. (115 knots)
	Flaps extended		125 m.p.h. (109 knots)
	Maximum gear retraction speed		125 m.p.h. (109 knots)
	Maximum gear extension speed		165 m.p.h.(143 knots)
	Maximum gear extended speed		165 m.p.h. (143 knots)
C. G. range (landing gear extended)	(+31.5) to (+33.8) in. at 3000 lb. (+24.6) to (+33.8) in. at 2500 lb. (+23.6) to (+33.8) in. at 2207 lb. Straight line variation between points given. Moment change due to retracting landing gear +655 in.-lb.		
Empty wt. C.G. range	None		
Maximum weight	3000 lb.		
No. seats	4 (2 at +30, 2 at +70)		
Maximum baggage	200 lb. (+100)		
Fuel capacity	80 gal. (two 20 gal. wing tanks, 19 gal. usable in each tank, at +22), (two 20 gal. auxiliary wing tanks, 18.5 gal. usable in each tank, at +41). See NOTE 1 for unusable fuel.		
Oil capacity	3 gal. (-23). See NOTE 1 for data on system oil.		
Control surface movements	Wing flaps		Down 40°
	Aileron tab	Fixed	
	Aileron	Up 22°	Down 9.5°
	Elevator tab	Up 3°	Down 13°
	Elevator	Up 32°	Down 20°
	Rudder	Right 21°	Left 21°
Serial Nos. eligible 251 and 252			

II - Model 200A, 4 PCLM (Normal Category), Approved June 18, 1959

(The Model 200 may be converted to a Model 200A in accordance with Meyers Drawing A60B005)

Engine	Continental IO-470-D
Fuel	100/130 minimum grade aviation gasoline

Engine limits	For all operations, 2625 r.p.m. (260 hp.)		
Propeller and propeller limits	See NOTE 6		
Airspeed limits	Never exceed		208 m.p.h. (181 knots)
	Maximum structural cruising		165 m.p.h. (143 knots)
	Maneuvering		132 m.p.h. (115 knots)
	Flaps extended		125 m.p.h. (109 knots)
	Maximum gear retraction speed		125 m.p.h. (109 knots)
	Maximum gear extension speed		165 m.p.h. (143 knots)
	Maximum gear extended speed		165 m.p.h. (143 knots)
C.G. range (landing gear extended)	(+31.5) to (+33.8) in. at 3000 lb. (+24.6) to (+33.8) in. at 2500 lb. (+23.6) to (+33.8) in. at 2207 lb. Straight line variation between points given. Moment change due to retracting landing gear +655 in.-lb.		
Empty wt. C.G. range	None		
Maximum weight	3000 lb.		
No. seats	4 (2 at +30, 2 at +70)		
Maximum baggage	200 lb. (+100)		
Fuel capacity	80 gal. (two 20 gal. wing tanks, 18.5 gal. usable in each tank at +22), (two 20 gal. auxiliary wing tanks, 18.5 gal. usable in each tank at +41). See NOTE 1 for unusable fuel.		
Oil capacity	3 gal. (-23). See NOTE 1 for data on system oil.		
Control surface movements	Wing flaps		Down 40°
	Aileron	Up 22°	Down 9.5°
	Elevator tab	Up 3°	Down 13°
	Elevator	Up 32°	Down 20°
	Rudder	Right 21°	Left 21°
Serial Nos. eligible	253 thru 263		

III - Model 200B, 4 PCLM (Normal Category), Approved March 9, 1961
Model 200C, 4 PCLM (Normal Category), Approved September 12, 1963

Engine	Continental IO-470-D (See Note 5 for optional engine)		
Fuel	100/130 minimum grade aviation gasoline		
Engine limits	For all operations, 2625 r.p.m. (260 hp.)		
Propeller and Propeller limits	See NOTE 6		
Airspeed limits	Never exceed		236 m.p.h. (205 knots)
	Maximum structural cruising		210 m.p.h. (182 knots)
	Maneuvering		132 m.p.h. (115 knots)
	Flaps extended		125 m.p.h. (109 knots)
	Maximum gear retraction speed		125 m.p.h. (109 knots)
	Maximum gear extension speed		170 m.p.h. (148 knots)
	Emergency gear extension speed		210 m.p.h. (182 knots)
	Maximum gear extended speed		210 m.p.h. (182 knots)
C.G. range (landing gear extended)	(+31.5) to (+33.8) in. at 3000 lb. (+24.6) to (+33.8) in. at 2500 lb. (+23.6) to (+33.8) in. at 2207 lb. Straight line variation between points given. Moment change due to retracting landing gear +655 in.-lb.		
Empty wt. C.G. range	None		
Maximum weight	3000 lb.		
No. seats	4 (2 at +30, 2 at +70)		
Maximum baggage	200 lb. (+100)		
Fuel capacity	80 gal. (two 20 gal. wing tanks, 18.5 gal. usable in each tank, at +22), (two 20 gal. auxiliary wing tanks, 18.5 gal. usable in each tank at +41). See NOTE 1 for unusable fuel.		
Oil capacity	3 gal. (-23). See NOTE 1 for data on system oil.		
Control surface movements	Wing flaps		Down 40°
	Aileron	Up 22°	Down 9.5°
	Elevator tab	Up 3°	Down 13°
	Elevator	Up 32°	Down 20°
	Rudder	Right 21°	Left 21°
Serial Nos. eligible	Model 200B: 264 thru 280 Model 200C: 281 thru 289, 291		

IV - Model 200D, 4 PCLM (Normal Category), Approved November 25, 1964

Engine	Continental IO-520-A		
Fuel	100/130 minimum grade aviation gasoline		
Engine limits	For all operations, 2700 r.p.m. (285 hp.)		
Propeller and propeller limits	See NOTE 6		
Airspeed limits	Never exceed		236 m.p.h. (205 knots)
	Maximum structural cruising		210 m.p.h. (182 knots)
	Maneuvering		132 m.p.h. (115 knots)
	Flaps extended		125 m.p.h. (109 knots)
	Maximum gear retraction speed		125 m.p.h. (109 knots)
	Maximum gear extension speed		170 m.p.h. (148 knots)
	Emergency gear extension speed		210 m.p.h. (182 knots)
	Maximum gear extended speed		210 m.p.h. (182 knots)
C.G. range (landing gear extended)	(+31.5) to (+33.8) in. at 3000 lb. (+24.6) to (+33.8) in. at 2500 lb. (+23.6) to (+33.8) in. at 2207 lb. Straight line variation between points given. Moment change due to retracting landing gear +655 in.-lb.		
Empty wt. C.G. range	None		
Maximum weight	3000 lb.		
No. seats	4 (2 at +30, 2 at +70)		
Maximum baggage	200 lb. (+100)		
Fuel capacity	80 gal. (two 20 gal. wing tanks, 18.5 gal. usable in each tank, at +22), (two 20 gal. auxiliary wing tanks, 18.5 gal. usable in each tank at +41). See NOTE 1 for unusable fuel.		
Oil capacity	3 gal. (-23). See NOTE 1 for data on system oil.		
Control surface movements	Wing flaps		Down 40°
	Aileron	Up 22°	Down 9.5°
	Elevator tab	Up 3°	Down 13°
	Elevator	Up 32°	Down 20°
	Rudder	Right 21°	Left 21°
Serial Nos. eligible	290, 292 and up		

V - Model 400, 4 PCLM (Normal Category), Approved August 20, 1971

Engine	Garrett AiResearch TPE 331-1-101J (P/N 896380)
Fuel	Jet Fuel conforming to AiResearch Report PE-5064R (Jet A, A-1, B, JP-1, JP-4, and JP-5) (See NOTE 4).
Oil	MIL-L-23699A (Type II) only, as listed in AiResearch Report No. PE-5065R.

Engine Limits

	Shaft Horsepower	Torque Pressure (psi)	RPM	EGT(°C)
Takeoff (5 min)	400	40	2000*	578
Maximum Continuous	400	40**	2000	556

* A maximum of 2020 RPM for 5 minutes is allowed.

** 41.2 psi MCP torque pressure permitted in 96% RPM cruise.

Propeller and propeller limits

a) Hartzell HC-B3TN-5C/T10178H-15 full feathering, reversible, constant speed three blade propeller.
Diameter: 86 inches (no reduction permitted)
Pitch settings at 30 in. sta.:

Feathered	+86.5 ± .5°
Flight Idle	+6.5 ± .2°
Full Reverse	-10.5 ± 1.0°
Start Locks	+2.5 ± .2°

b) Hartzell D3434 spinner assembly

Airspeed limits	Maximum operating speed	240 mph (208 knots)
	Maneuvering speed	155 mph (134 knots)
	Flaps extended	125 mph (109 knots)
	Maximum Landing Gear Extension/extended	165 mph (144 knots)
	Maximum landing gear Retraction speed	132 mph (115 knots)
C.G. range (landing gear extended)	(+30.5) to (+33.0) in. at 4005 lb. (+29.1) to (+33.0) in. at 3800 lb. (+27.0) to (+33.0) in. at 2750 lb. Straight line variation between points given. Moment change due to retracting landing gear +580 in - lbs.	
Empty wt. C.G. range	None	
Datum	Front face of firewall	
Leveling means	Two external screws on left side of fuselage below the horizontal stabilizer.	
Maximum weights	Ramp	4030 lbs.
	Takeoff	4005 lbs.
	Landing	3800 lbs.
	Zero Fuel	3200 lbs.

No. seats	4 (2 at +38, 2 at +70)
Maximum baggage	200 lbs. (+100)
Fuel capacity	155.4 gallons at +35.9 (Two 77.7 gallon tanks, 145 gallons usable). See NOTE 1 for data on system fuel.
Oil capacity	11.5 qts. (-40.5). See NOTE 1 for data on system oil.
Maximum operating altitude	24,000 feet

Control surface movements				
Wing Flaps			Down	40° ± .5°
Aileron	Up	22° ± 1.0°	Down	9.5° ± 1.0°
Elevator Tab	Up	1° ± 1.0°	Down	20° ± 1.0°
Elevator	Up	$28^\circ\,^{+2^\circ}_{-.5^\circ}$	Down	20° ± 1.0°
Rudder Tab	Left	20° ± 1.0°	Right	10° ± 1.0°
Rudder	Left	15° ± 1.0°	Right	35° ± 1.0°

Serial nos. eligible	401 and up

⑤ Data Pertinent to All Models (except as listed)

Datum	Front face of firewall
Leveling means	Two external screws on left side of fuselage below stabilizer.
Certification basis: Model 200 " 200A " 200B " 200C " 200D	CAR 3 effective May 15, 1956 through Amendment 3-1 effective April 1, 1957. Type Certificate issued March 6, 1958. Date of application for Type Certificate April 30, 1957.
Model 400	CAR 3 effective May 15, 1956 through Amendment 3-1 effective April 1, 1957 and paragraphs 3.197, 3.270, 3.383, 3.395 and 3.396 of Amendment 3-2 effective August 12, 1957. Special Conditions outlined in Docket 9972 dated November 12, 1969. (See NOTE 7) Type Certificate 3A18 issued March 6, 1958. Date of application for original Type Certificate April 30, 1957.
Production basis	None. Prior to original certification of each aircraft an FAA representative must perform a detailed inspection for workmanship, materials and conformity with approved technical data and a check of flight characteristics.

⑥ Equipment: The basic required equipment as prescribed in the applicable airworthiness regulations (see Certification Basis) must be installed in the aircraft for certification. In addition, the following items of equipment are required:

1. Prestall warning indicator, Safe Flight Instrument Corp. 1-02-000 (Models 200, 200A, 200B, 200C and 200D)

2. (a) Model 200 FAA Approved Airplane Flight Manual dated March 6, 1958
   (b) Model 200A FAA Approved Airplane Flight Manual dated June 18, 1959
   (c) Model 200B FAA Approved Airplane Flight Manual dated March 9, 1961
   (d) Model 200C FAA Approved Airplane Flight Manual dated September 12, 1963
   (e) Model 200D FAA Approved Airplane Flight Manual dated November 25, 1964
   (f) Model 400 FAA Approved Airplane Flight Manual dated August 11, 1971

3. Model 400

   (a) Stall warning indicator, Interceptor drawing D69B031.
   (b) See Interceptor Report 60M018 for additional equipment.

⑦

NOTE 1. Current weight and balance report with list of equipment included in certificated empty weight, and loading instructions when necessary must be provided for each aircraft at time of original certification.

Models 200, 200A, 200B, 200C and 200D: The certificated empty weight and corresponding center of gravity location must include system oil of 1 lb. at -23, and unusable fuel of 18 lb. at +22, with standard wing tanks. Include additional unusable fuel at 18 lb. at -41 when auxiliary wing tanks are installed (Models 200A, 200B, 200C and 200D).

Model 400: The certificated empty weight and corresponding center of gravity location must include system oil of 5.6 lb at -40.5, and unusable fuel of 69.7 lb. at +40.5.

NOTE 2. The following placard must be displayed on the right side of the instrument panel in clear view of the pilot:

Models 200, 200A, 200B, 200C and 200D: "THIS AIRPLANE MUST BE OPERATED AS A NORMAL CATEGORY AIRPLANE IN COMPLIANCE WITH THE OPERATING LIMITATIONS STATED IN THE FORM OF PLACARDS, MARKINGS, AND MANUALS."

Model 400: "THIS AIRPLANE MUST BE OPERATED AS A NORMAL CATEGORY AIRPLANE IN COMPLIANCE WITH THE OPERATING LIMITATIONS STATED IN THE FORM OF PLACARDS, MARKINGS AND MANUALS. NO ACROBATIC MANEUVERS INCLUDING SPINS APPROVED. AIRSPEED LIMITATIONS, MAXIMUM LANDING GEAR RETRACTION SPEED - 115 KTS: MAXIMUM LANDING GEAR EXTENSION/EXTENDED SPEED - 144 KTS: MANEUVERING SPEED 134 KTS."

All placards required in the approved airplane flight manual must be installed in the appropriate locations.

NOTE 3. Model 400 The following service life limits must be observed:

1. Interceptor Drawing C63R160 Left Pilot's Side window - 1000 hours
2. Pressurized Cabin Structure - 2000 hours

NOTE 4. All fuel used in the Model 400 airplane must contain anti-icing additive meeting the requirement of PFA-55MB. Concentration of this additive in the fuel in a loaded fuel tank must not be less than .035% nor more than .15% by volume. See AFM for blending instructions. Use of AV-GAS prohibited.

NOTE 5. Continental IO-520-A engine may be installed on the Model 200B when the airplane is modified in accordance with Meyers Aircraft Drawing B60B010, Rev. A, dated March 30, 1965. Model 200B with Conversion #1 FAA Approved Airplane Flight Manual dated March 19, 1965, is required with this modification. Continental IO-520-A engine may be installed on the Model 200C when the airplane is modified in accordance with Meyers Aircraft Drawing C60B010 dated June 12, 1965. Model 200C with Conversion #1 FAA Approved Airplane Flight Manual dated June 12, 1965, is required with this modification.

NOTE 6. Propellers eligible as shown:

Propellers eligible as shown:	200	200A	200B	200C	200D
1. McCauley constant speed propeller installation					
(a) McCauley hub 2A36C18 with 90M-6 blades Diameter: not over 84 in., not under 82.5 in. Pitch settings at 36 in. sta.: Low 10°, high 25° 63 lbs. (-53)	X				
(b) Woodward hydraulic governor 210105 3 lb. (-45)	X				
(c) McCauley spinner 2A36 4 lb. (-53)	X				
2. McCauley constant speed propeller installation					
(a) McCauley hub B2A36C31 with 90M-6 blades Diameter: not over 84 in., not under 82 in. Pitch settings at 36 in. sta.: Low 11°, high 27.5° 63 lb. (-53)		X	X	X	
(b) Woodward hydraulic governor 210105 or E210345 3 lb. (-45)		X	X	X	
(c) McCauley spinner 2A36 4 lb. (-53)		X	X	X	
3. McCauley constant speed propeller installation					
(a) McCauley B2A36C31-A hub with 90M-10 blades Diameter: not over 80 in., not under 80 in. Pitch settings at 36 in. sta: Low 11.4°, high 27.5° 63 lb. (-53)		X	X		
(b) Woodward hydraulic governor 210105 or E210345 3 lb. (-45)		X	X		
(c) McCauley spinner 2A36 4 lb. (-53)		X	X		
4. McCauley constant speed propeller installation					
(a) McCauley D2A36C31-A hub with 90M-10 blades Diameter: not over 80 in., not under 80 in. Pitch settings at 36 in. sta.: Low 11.4°, high 27.5° 63 lb. (-53)		X	X		
(b) Woodward hydraulic governor 210105 or E210345 3 lb. (-45)		X	X		

	200	200A	200B	200C	200D
(c) McCauley spinner D2A36 or McCauley spinner 2A36 with B2792 ring 4 lb. (-53)		X	X		
5. McCauley constant speed propeller installation					
(a) McCauley D2A36C33 hub with 90M-8 blades Diameter: not over 82 in., not under 80 in. Pitch settings at 36 in. sta.: Low 11.2°, high 27.5° 63 lb. (-53)		X	X	X	
(b) Woodward hydraulic governor 210105 or E210345 3 lb. (-45)		X	X	X	
(c) McCauley spinner D2A36 or McCauley spinner 2A36 with B2792 ring 4 lb. (-53)		X	X	X	
6. McCauley constant speed propeller installation					
(a) McCauley D2A36C33 hub with 90M-10 blades Diameter: not over 80 in., not under 80 in. Pitch settings at 36 in. sta.: Low 11.4°, high 27.5° 63 lb. (-53)		X	X	X	
(b) Woodward hydraulic governor 210105 or E210345 3 lb. (-45)		X	X	X	
(c) McCauley spinner D2A36 or McCauley spinner 2A36 with B2792 ring 4 lb. (-53)		X	X	X	
7. Hartzell constant speed propeller installation					
(a) Hartzell HC-82XF-1DB hub with 8433S blades Diameter: not over 84 in., not under 82.5 in. Pitch settings at 30 in. sta.: Low 12°, high 24° 64 lb. (-53)	X				
(b) Woodward hydraulic governor 210105 3 lb. (-45)	X				
(c) Hartzell Spinner 835-3 4 lb. (-53)	X				
8. Hartzell constant speed propeller installation					
(a) Hartzell HC-A2XF-1A(14) hub with 8433-4 or 8433R-4 blades Diameter: not over 80 in., not under 78 in. Pitch settings at 30 in. sta: Low 14°, high 26.1° 64 lb. (-53)		X	X	X	
(b) Woodward hydraulic governor 210105 or E210340 3 lb. (-45)		X	X	X	
(c) Hartzell spinner 835-13 4 lb. (-53)		X	X	X	
9. Hartzell constant speed propeller installation					
(a) Hartzell HC-82XF-1DB hub with 8433-4 blades Diameter: not over 80 in., not under 78 in. Pitch settings at 30 in. sta.: Low 14°, high 26.1° 64 lb. (-53)		X	X		
(b) Woodward hydraulic governor 210105 or E210340 3 lb. (-45)		X	X		

TECHNICAL INFORMATION SUPPLEMENT #5

		200	200A	200B	200C	200D
	(c) Hartzell spinner 835-3 or 835-13 4 lb. (-53)		X	X		
	10. Hartzell constant speed propeller installation					
	(a) Hartzell HC-C2YF-1A hub with 8468-4 blades Diameter: not over 80 in., not under 80 in. Pitch settings at 30 in. sta.: Low 14°, high 30.5 ± 1.0° 51 lb. (-53)				X	
	(b) Woodward hydraulic governor 210105 or E210345 3 lb. (-45)				X	
	(c) Hartzell spinner 835-22K 3 lb. (-53)				X	
	11. McCauley constant speed propeller installation					
[	(a) McCauley D2A34C58 hub with 90AT-8 blades Diameter: not over 82 in., not under 80 in. Pitch settings at 36 in. sta.: Low 10.3 ± 0.5°, high 27.5 ± 0.5° 52 lb. (-53)			X	X	X
[	(b) Woodward hydraulic governor 210105 or E210345 3 lb. (-45)			X	X	X
[	(c) McCauley spinner D-2771 4 lb. (-53)			X	X	X

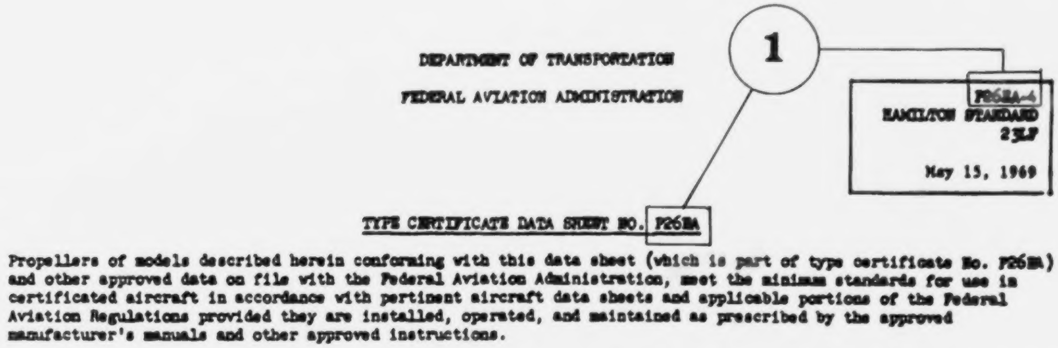
[Item 11(a), 11(b), and 11(c) are eligible on Models 200B and 200C only when airplane is modified per Note 5.

NOTE 7. The special conditions are only applicable with a 400 h.p. flat rated engine that is capable of maintaining rated power up to 8000 feet pressure altitude under standard day conditions plus 40°F.

...END...

B. Propellers

The type certificate number is located in the upper right hand corner of the TCDS. The data sheet number is always the same as the type certificate number. (See number one)



DEPARTMENT OF TRANSPORTATION

FEDERAL AVIATION ADMINISTRATION

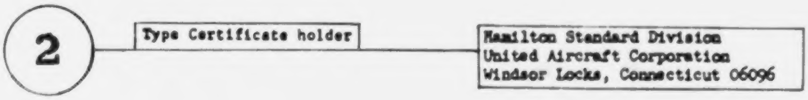
P26BA-4
HAMILTON STANDARD
23LF

May 15, 1969

TYPE CERTIFICATE DATA SHEET NO. P26BA

Propellers of models described herein conforming with this data sheet (which is part of type certificate No. P26BA) and other approved data on file with the Federal Aviation Administration, meet the minimum standards for use in certificated aircraft in accordance with pertinent aircraft data sheets and applicable portions of the Federal Aviation Regulations provided they are installed, operated, and maintained as prescribed by the approved manufacturer's manuals and other approved instructions.

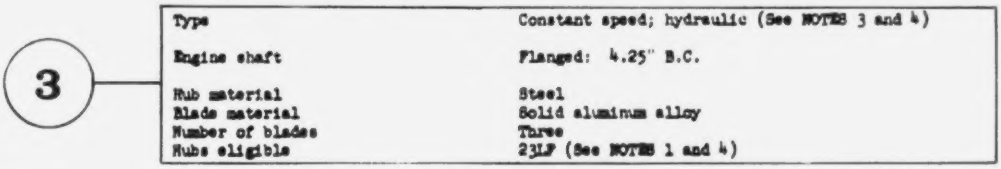
The TCDS also identifies the name and address of the type certificate holder. (See number 2)



Type Certificate holder

Hamilton Standard Division
United Aircraft Corporation
Windsor Locks, Connecticut 06096

The propeller TCDS also contains the type and a brief description of the propeller. (See number 3)



Type	Constant speed; hydraulic (See NOTES 3 and 4)
Engine shaft	Flanged: 4.25" B.C.
Hub material	Steel
Blade material	Solid aluminum alloy
Number of blades	Three
Hubs eligible	23LF (See NOTES 1 and 4)

The next section contains a listing of blades that are eligible for use on the specific propeller. (See number 4)

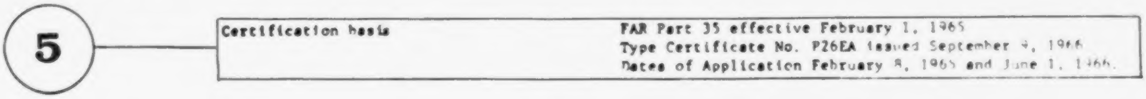
④

Blades Eligible (See NOTE 2)	Maximum Continuous HP	Maximum Continuous RPM	Takeoff HP	Takeoff RPM	Diameter Limits (See NOTE 2)	Hub and Blade Weight (max. dia.)	NOTES
1011-0 to 1011-11	660	2200	660	2200	9'3" to 8'4" (-0 to -11)	153	
1012 is the left-hand version of 1011.							5
1013-0 to 1013-11	660	2200	660	2200	7'9" to 6'10" (-0 to -11)	136	
1014 is the left-hand version of 1013.							5
1017-0 to 1017-22	900 or 857	1783 2200	1010 or 857	1783 2200	8'6" to 6'8" (-0 to -22)	151	
1018 is the left-hand version of 1017.							5
1023-0 to 1023-11	660	2200	660	2200	8'6" to 7'7" (-0 to -11)	151	
1024 is the left-hand version of 1023.							5
1025-0 to 1025-11	660	2200	660	2200	9'3" to 8'4" (-0 to -11)	153	
1026 is the left-hand version of 1025.							5
1027-0 to 1027-11	660	2200	660	2200	8'6" to 7'7" (-0 to -11)	151	
1028 is the left-hand version of 1027.							5
1029-0 to 1029-11	660	2200	660	2200	7'9" to 6'10" (-0 to -11)	136	
1030 is the left-hand version of 1029.							5
1031-0 to 1031-11	660	2200	660	2200	8'6" to 7'7" (-0 to -11)	151	
1032 is the left-hand version of 1031.							5

TECHNICAL INFORMATION SUPPLEMENT #5

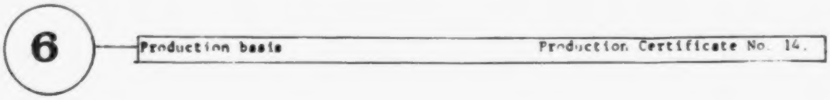
Next is the basis for certification, the date the manufacturer applied for certification, and the date certification was effective. (See number 5)

(NOTE: The basis for certification means the regulation which was used for airworthiness standards.)



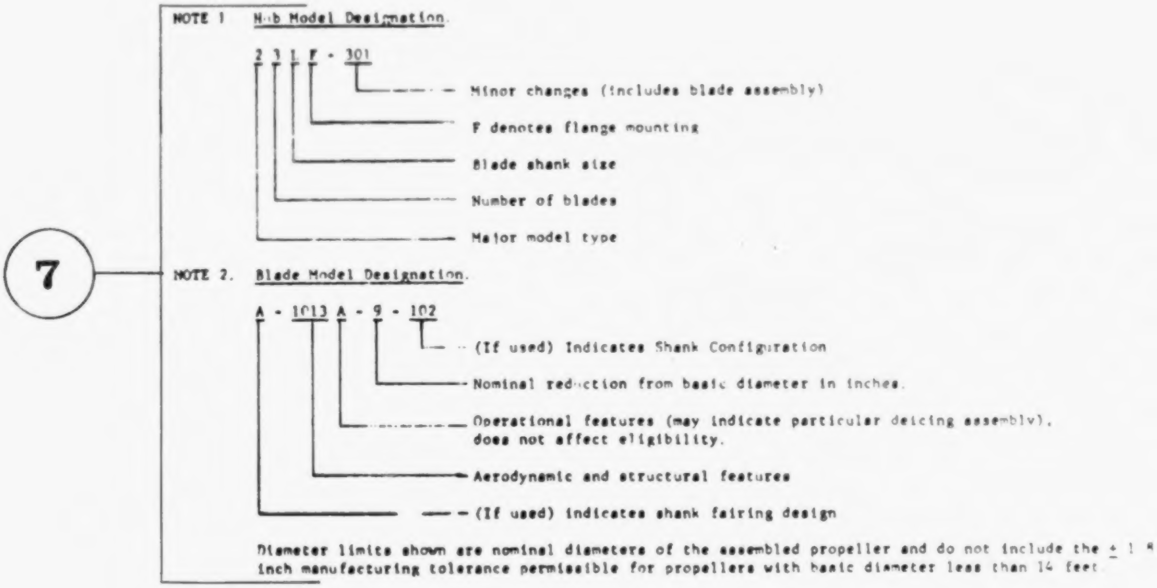
Certification basis	FAR Part 35 effective February 1, 1965 Type Certificate No. P26EA issued September 9, 1966 Dates of Application February 8, 1965 and June 1, 1966.

Next is the authorization number to begin production of the propeller. (See number 6)



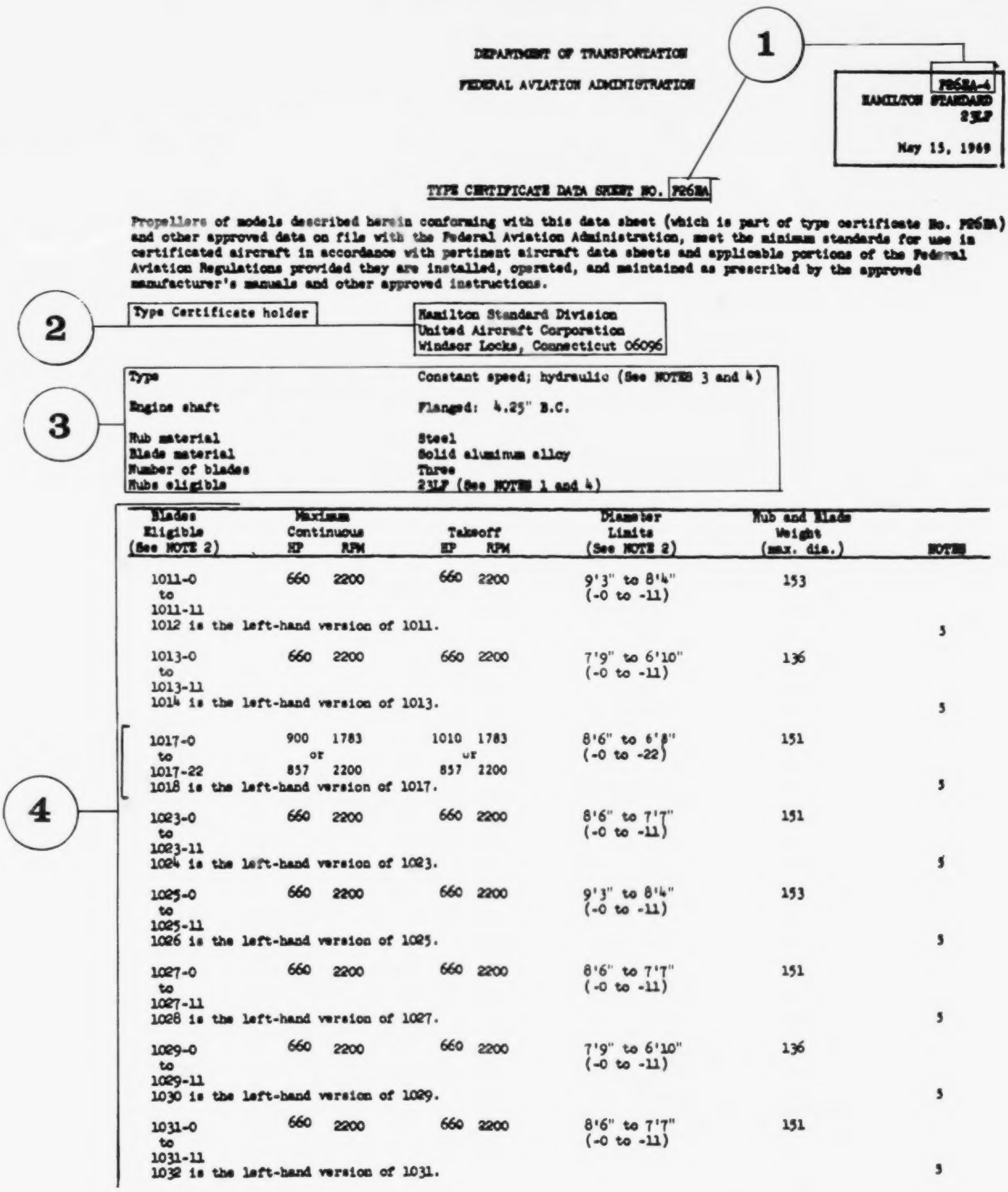
Production basis	Production Certificate No. 14.

The "Notes Section" contains hub and blade model designations and other operational data applicable to the specific propeller. (See number 7)


7
NOTE 1 Hub Model Designation.
2 3 L F - 301
Minor changes (includes blade assembly)
F denotes flange mounting
Blade shank size
Number of blades
Major model type
NOTE 2. Blade Model Designation.
A - 1013 A - 9 - 102
(If used) Indicates Shank Configuration
Nominal reduction from basic diameter in inches.
Operational features (may indicate particular deicing assembly), does not affect eligibility.
Aerodynamic and structural features
(If used) indicates shank fairing design

Diameter limits shown are nominal diameters of the assembled propeller and do not include the ± 1 8 inch manufacturing tolerance permissible for propellers with basic diameter less than 14 feet.

TECHNICAL INFORMATION SUPPLEMENT #5



DEPARTMENT OF TRANSPORTATION

FEDERAL AVIATION ADMINISTRATION

P26EA-4
HAMILTON STANDARD
23LF

May 15, 1969

TYPE CERTIFICATE DATA SHEET NO. P26EA

Propellers of models described herein conforming with this data sheet (which is part of type certificate No. P26EA) and other approved data on file with the Federal Aviation Administration, meet the minimum standards for use in certificated aircraft in accordance with pertinent aircraft data sheets and applicable portions of the Federal Aviation Regulations provided they are installed, operated, and maintained as prescribed by the approved manufacturer's manuals and other approved instructions.

Type Certificate holder

Hamilton Standard Division
United Aircraft Corporation
Windsor Locks, Connecticut 06096

Type	Constant speed; hydraulic (See NOTES 3 and 4)
Engine shaft	Flanged: 4.25" B.C.
Hub material	Steel
Blade material	Solid aluminum alloy
Number of blades	Three
Hubs eligible	23LF (See NOTES 1 and 4)

Blades Eligible (See NOTE 2)	Maximum Continuous HP	Maximum Continuous RPM	Takeoff HP	Takeoff RPM	Diameter Limits (See NOTE 2)	Hub and Blade Weight (max. dia.)	NOTES
1011-0 to 1011-11	660	2200	660	2200	9'3" to 8'4" (-0 to -11)	153	
1012 is the left-hand version of 1011.							5
1013-0 to 1013-11	660	2200	660	2200	7'9" to 6'10" (-0 to -11)	136	
1014 is the left-hand version of 1013.							5
1017-0 to 1017-22	900 or 857	1783 2200	1010 or 857	1783 2200	8'6" to 6'8" (-0 to -22)	151	
1018 is the left-hand version of 1017.							5
1023-0 to 1023-11	660	2200	660	2200	8'6" to 7'7" (-0 to -11)	151	
1024 is the left-hand version of 1023.							5
1025-0 to 1025-11	660	2200	660	2200	9'3" to 8'4" (-0 to -11)	153	
1026 is the left-hand version of 1025.							5
1027-0 to 1027-11	660	2200	660	2200	8'6" to 7'7" (-0 to -11)	151	
1028 is the left-hand version of 1027.							5
1029-0 to 1029-11	660	2200	660	2200	7'9" to 6'10" (-0 to -11)	136	
1030 is the left-hand version of 1029.							5
1031-0 to 1031-11	660	2200	660	2200	8'6" to 7'7" (-0 to -11)	151	
1032 is the left-hand version of 1031.							5

4 CONT.

Blades Eligible (See NOTE 2)	Maximum Continuous HP	Maximum Continuous RPM	Takeoff HP	Takeoff RPM	Diameter Limits (See NOTE 2)	Hub and Blade Weight (Max. lbs.)	NOTES
1033-0 to 1033-11	660	2200	660	2200	7'6' to 6'7' (-0 to -11)	[illegible]	
1034 is the left-hand version of 1033.							5
1047-0 to 1047-22	857	2200	857	2200	8'6' to 6'8 (-0 to -22)	150	
1048 is the left-hand version of 1047							5

5

Certification basis	FAR Part 35 effective February 1, 1965 Type Certificate No. P26EA issued September 9, 1966 Dates of Application February 8, 1965 and June 1, 1966.

6

Production basis	Production Certificate No. 14.

7

NOTE 1. **Hub Model Designation.**

2 3 L F - 301

- 301 — Minor changes (includes blade assembly)
- F — F denotes flange mounting
- L — Blade shank size
- 3 — Number of blades
- 2 — Major model type

NOTE 2. **Blade Model Designation.**

A - 1013 A - 9 - 102

- 102 — (If used) Indicates Shank Configuration
- 9 — Nominal reduction from basic diameter in inches.
- A — Operational features (may indicate particular deicing assembly), does not affect eligibility.
- 1013 — Aerodynamic and structural features
- A — (If used) indicates shank fairing design

Diameter limits shown are nominal diameters of the assembled propeller and do not include the ± 1/8 inch manufacturing tolerance permissible for propellers with basic diameter less than 14 feet.

NOTE 3. **Pitch Control**. Eligible with appropriate constant speed control.

NOTE 4. (a) **Feathering** - Full feathering eligible with appropriate feathering control.
(b) **Reversing** - Full reversing eligible with appropriate reversing control.

NOTE 5 **Left Hand Models**. The left hand version of an approved propeller model is eligible at the same rating and diameter limitations as listed for the right hand model.

NOTE 6 **Interchangeable Blade** - Not applicable.

NOTE 7. **Accessories**
(a) **Propeller Deicing**. Eligible with Hamilton Standard Electrical Deicing System installed in accordance with the propeller manufacturer's instructions.
(b) **Propeller Spinner** Eligible with spinner supplied by Hamilton Standard.

NOTE 8. **Shank Fairings** Not applicable.

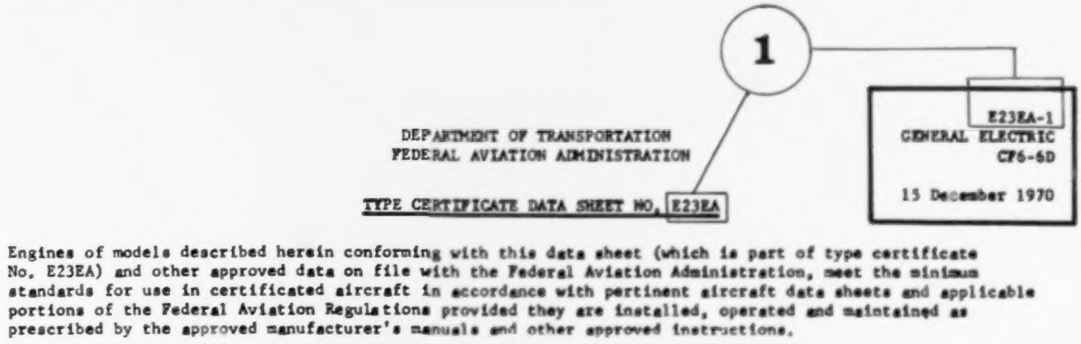
NOTE 9. **Special Limits**. Not applicable

NOTE 10. **Special Notes**. The word "eligible" as used herein does not signify approval. For approval, compliance with the applicable aircraft airworthiness requirements is necessary.

...END...

C. Turbine engines

The type certificate number is located in the upper right hand corner of the TCDS. The data sheet number is always the same as the type certificate number. (See number one)



DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

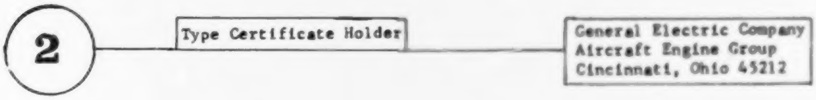
TYPE CERTIFICATE DATA SHEET NO. E23EA

E23EA-1
GENERAL ELECTRIC
CF6-6D

15 December 1970

Engines of models described herein conforming with this data sheet (which is part of type certificate No. E23EA) and other approved data on file with the Federal Aviation Administration, meet the minimum standards for use in certificated aircraft in accordance with pertinent aircraft data sheets and applicable portions of the Federal Aviation Regulations provided they are installed, operated and maintained as prescribed by the approved manufacturer's manuals and other approved instructions.

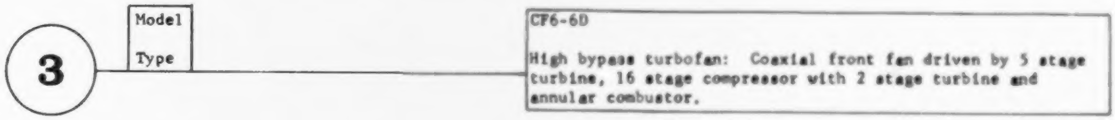
The TCDS also identifies the name and address of the type certificate holder. (See number 2)



Type Certificate Holder

General Electric Company
Aircraft Engine Group
Cincinnati, Ohio 45212

Following this we find the specific turbine engine model and a brief description of the engine. (See number 3)



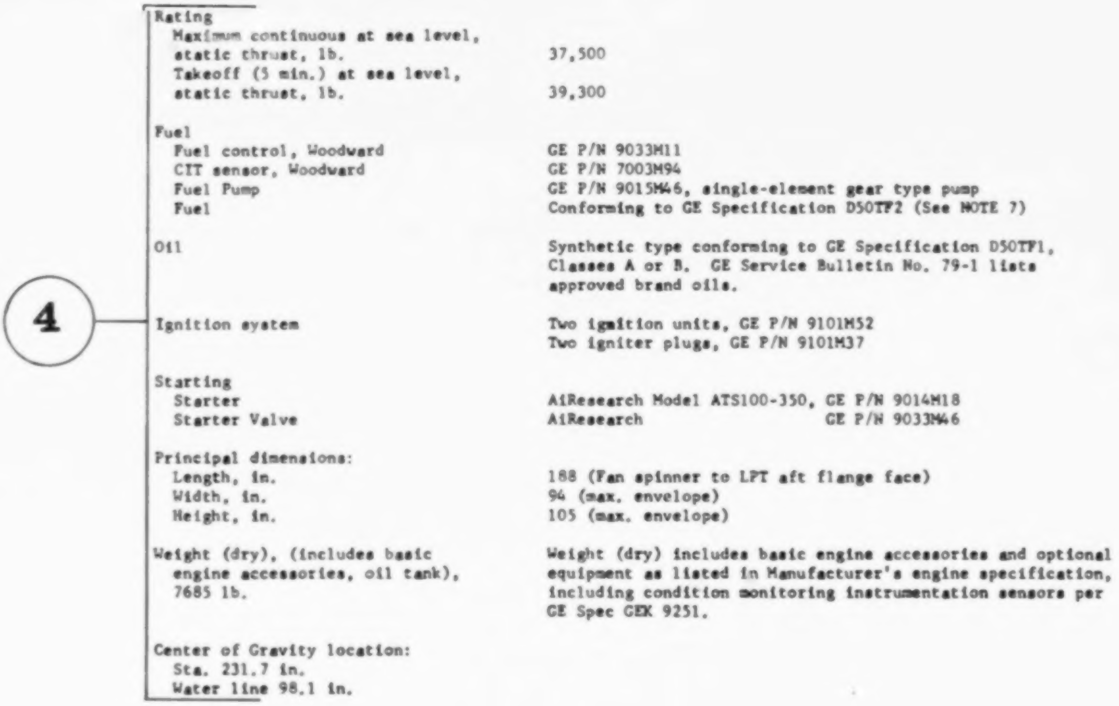
Model

Type

CF6-6D

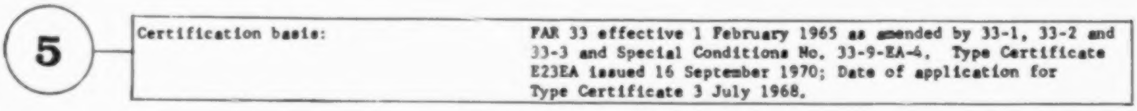
High bypass turbofan: Coaxial front fan driven by 5 stage turbine, 16 stage compressor with 2 stage turbine and annular combustor.

The TCDS also contains other engine specifications applicable to the engine model specified on the TCDS. (See number 4)



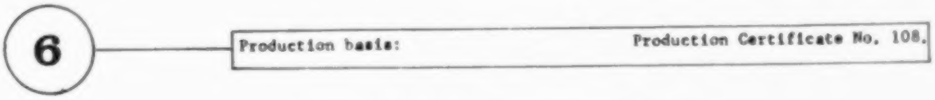
Rating	
Maximum continuous at sea level, static thrust, lb.	37,500
Takeoff (5 min.) at sea level, static thrust, lb.	39,300
Fuel	
Fuel control, Woodward	GE P/N 9033M11
CIT sensor, Woodward	GE P/N 7003M94
Fuel Pump	GE P/N 9015M46, single-element gear type pump
Fuel	Conforming to GE Specification D50TF2 (See NOTE 7)
Oil	Synthetic type conforming to GE Specification D50TF1, Classes A or B. GE Service Bulletin No. 79-1 lists approved brand oils.
Ignition system	Two ignition units, GE P/N 9101M52 Two igniter plugs, GE P/N 9101M37
Starting	
Starter	AiResearch Model ATS100-350, GE P/N 9014M18
Starter Valve	AiResearch GE P/N 9033M46
Principal dimensions:	
Length, in.	188 (Fan spinner to LPT aft flange face)
Width, in.	94 (max. envelope)
Height, in.	105 (max. envelope)
Weight (dry), (includes basic engine accessories, oil tank), 7685 lb.	Weight (dry) includes basic engine accessories and optional equipment as listed in Manufacturer's engine specification, including condition monitoring instrumentation sensors per GE Spec GEK 9251.
Center of Gravity location: Sta. 231.7 in. Water line 98.1 in.	

Next is the basis for certification, the date the manufacturer applied for certification, and the date certification became effective. (See number 5)



Certification basis:	FAR 33 effective 1 February 1965 as amended by 33-1, 33-2 and 33-3 and Special Conditions No. 33-9-EA-4. Type Certificate E23EA issued 16 September 1970; Date of application for Type Certificate 3 July 1968.

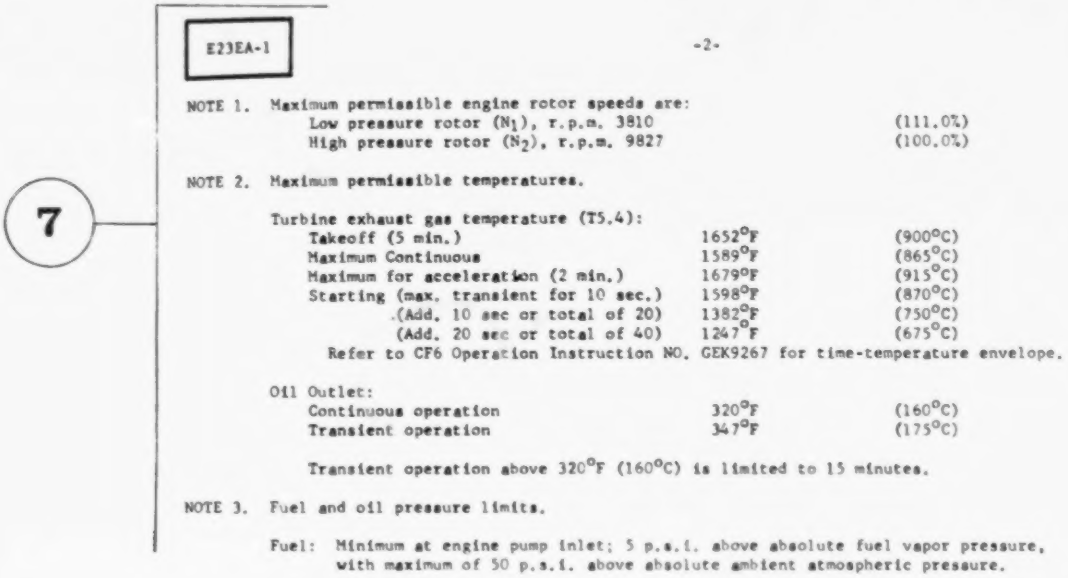
Following is the authorization number to begin production of the engine. (See number 6)



Production basis:	Production Certificate No. 108.

TECHNICAL INFORMATION SUPPLEMENT #5

The "Notes" section contains operational limitations, accessory drive provisions, performance rating conditions, acceptable fuels, and other operational data. (See number 7)



E23EA-1

-2-

NOTE 1. Maximum permissible engine rotor speeds are:

Low pressure rotor (N_1), r.p.m. 3810	(111.0%)
High pressure rotor (N_2), r.p.m. 9827	(100.0%)

NOTE 2. Maximum permissible temperatures.

Turbine exhaust gas temperature (T5.4):		
Takeoff (5 min.)	1652°F	(900°C)
Maximum Continuous	1589°F	(865°C)
Maximum for acceleration (2 min.)	1679°F	(915°C)
Starting (max. transient for 10 sec.)	1598°F	(870°C)
(Add. 10 sec or total of 20)	1382°F	(750°C)
(Add. 20 sec or total of 40)	1247°F	(675°C)

Refer to CF6 Operation Instruction NO. GEK9267 for time-temperature envelope.

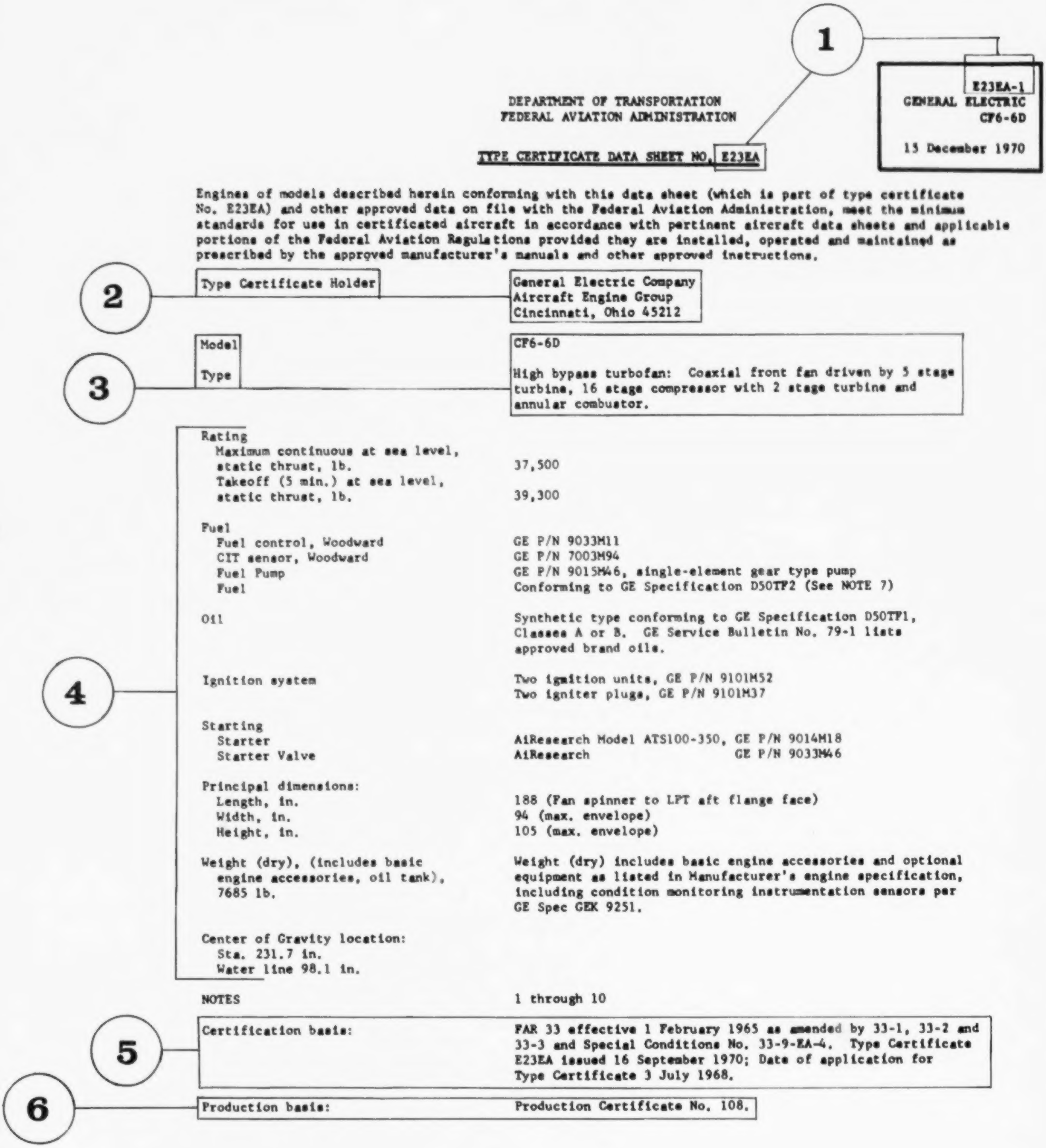
Oil Outlet:		
Continuous operation	320°F	(160°C)
Transient operation	347°F	(175°C)

Transient operation above 320°F (160°C) is limited to 15 minutes.

NOTE 3. Fuel and oil pressure limits.

Fuel: Minimum at engine pump inlet; 5 p.s.i. above absolute fuel vapor pressure, with maximum of 50 p.s.i. above absolute ambient atmospheric pressure.

TECHNICAL INFORMATION SUPPLEMENT #5



E23EA-1
GENERAL ELECTRIC
CF6-6D

13 December 1970

DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

TYPE CERTIFICATE DATA SHEET NO. E23EA

Engines of models described herein conforming with this data sheet (which is part of type certificate No. E23EA) and other approved data on file with the Federal Aviation Administration, meet the minimum standards for use in certificated aircraft in accordance with pertinent aircraft data sheets and applicable portions of the Federal Aviation Regulations provided they are installed, operated and maintained as prescribed by the approved manufacturer's manuals and other approved instructions.

Type Certificate Holder	General Electric Company Aircraft Engine Group Cincinnati, Ohio 45212
Model	CF6-6D
Type	High bypass turbofan: Coaxial front fan driven by 5 stage turbine, 16 stage compressor with 2 stage turbine and annular combustor.
Rating	
Maximum continuous at sea level, static thrust, lb.	37,500
Takeoff (5 min.) at sea level, static thrust, lb.	39,300
Fuel	
Fuel control, Woodward	GE P/N 9033M11
CIT sensor, Woodward	GE P/N 7003M94
Fuel Pump	GE P/N 9015M46, single-element gear type pump
Fuel	Conforming to GE Specification D50TF2 (See NOTE 7)
Oil	Synthetic type conforming to GE Specification D50TF1, Classes A or B. GE Service Bulletin No. 79-1 lists approved brand oils.
Ignition system	Two ignition units, GE P/N 9101M52 Two igniter plugs, GE P/N 9101M37
Starting	
Starter	AiResearch Model ATS100-350, GE P/N 9014M18
Starter Valve	AiResearch GE P/N 9033M46
Principal dimensions:	
Length, in.	188 (Fan spinner to LPT aft flange face)
Width, in.	94 (max. envelope)
Height, in.	105 (max. envelope)
Weight (dry), (includes basic engine accessories, oil tank), 7685 lb.	Weight (dry) includes basic engine accessories and optional equipment as listed in Manufacturer's engine specification, including condition monitoring instrumentation sensors per GE Spec GEK 9251.
Center of Gravity location: Sta. 231.7 in. Water line 98.1 in.	
NOTES	1 through 10
Certification basis:	FAR 33 effective 1 February 1965 as amended by 33-1, 33-2 and 33-3 and Special Conditions No. 33-9-EA-4. Type Certificate E23EA issued 16 September 1970; Date of application for Type Certificate 3 July 1968.
Production basis:	Production Certificate No. 108.

NOTE 1. Maximum permissible engine rotor speeds are:

Low pressure rotor (N_1), r.p.m. 3810		(111.0%)
High pressure rotor (N_2), r.p.m. 9827		(100.0%)

NOTE 2. Maximum permissible temperatures.

Turbine exhaust gas temperature (T5.4):		
Takeoff (5 min.)	1652°F	(900°C)
Maximum Continuous	1589°F	(865°C)
Maximum for acceleration (2 min.)	1679°F	(915°C)
Starting (max. transient for 10 sec.)	1598°F	(870°C)
.(Add. 10 sec or total of 20)	1382°F	(750°C)
(Add. 20 sec or total of 40)	1247°F	(675°C)

Refer to CF6 Operation Instruction NO. GEK9267 for time-temperature envelope.

Oil Outlet:		
Continuous operation	320°F	(160°C)
Transient operation	347°F	(175°C)

Transient operation above 320°F (160°C) is limited to 15 minutes.

NOTE 3. Fuel and oil pressure limits.

Fuel: Minimum at engine pump inlet; 5 p.s.i. above absolute fuel vapor pressure, with maximum of 50 p.s.i. above absolute ambient atmospheric pressure.

Oil: At idle, 10 p.s.i.g. minimum
Operating range, 30 to 90 p.s.i.g.

Refer to CF6 Operating Instruction No. GEK 9267 for operating range limits.

7 NOTE 4. Accessory drive provisions:

Drive pad	Rotation	Gear Ratio to Core Speed	Torque (in.-lb.) Cont.	Static	Static Overhung Moment (in.-lb.)
Starter	CC	1.000	10,800	19,200	400
CSD	CC	.870	(250 H.P.)	17,400	900
Alternator*	C	-----	-------	------	1,000
Tachometer (core)**	C	.427	7	540	3
Hydraulic Pump	CC	.366	(85 H.P.)	7,400	500
Hydraulic Pump	CC	.366	(85 H.P.)	7,400	500

C - Clockwise; CC-Counter-Clockwise
* - Alternator driven by CSD
** - Tachometer mounted on and driven through Main Lube & Scavenge Pump.

NOTE 5. Engine ratings are based on calibrated stand performance under the following conditions.

Fan inlet air at 59°F and 29.92 in Hg.
GE bellmouth air inlet per GE Drawing 4013106-124.
No external air bleed or accessory drive power for aircraft accessories.
Fan Nozzle configuration defined by GE Drawing 4013124-051.
Jet Nozzle configuration defined by GE Drawing 4013124-012.
Turbine temperature and engine rotor speed limits not exceeded.
Core engine acceptance test cowling defined by GE Drawings 4013124-021 and 4013124-022.
Pylon configuration acceptance test cowling defined by GE Drawing 4013124-091.

The Takeoff static thrust at sea level is flat rated to 84°F ambient temperature; the Max. Continuous thrust at sea level is flat rated to 77°F. Engine performance deck R70AEG214, is the prime source of engine performance data throughout the flight envelope.

NOTE 6. Maximum permissible air bleed extraction is as follows:

Bleed Location	Compressor Airflow (%)
Stage 8	5
Compressor Discharge:	
Steady State @ T.O. Rating	5
Steady State between 80% N_2 and M.C.	10
During acceleration above 80% N_2	7
Operation at 80% N_2 or below	12.5
Stage 13	2

7 CONT.

NOTE 7. a) Approved fuel conforming to GE Specification D50TF2. MIL-T-5624G, Grades JP-4 or JP-5, and ASTM D 1655-65T, Jet A, A1 and B, are consistent with this General Electric Specification. Primary fuel is Jet A, with other fuels listed being acceptable alternates. No fuel control adjustment is required when changing from primary to alternate fuels.

b) Additives that may be used (in addition to those authorized by GE Specification D50TF2) in approved fuels are listed below. These additives may be used in combination.

1) Phillips PFA-55MB or anti-icing additive to Specification MIL-I-27686D at a concentration not in excess of 0.15 percent by volume.

2) Sohio Biobor JF biocide additive at a concentration not in excess of 20 ppm elemental baron (270 ppm total additive).

3) Shell ASA-3 anti-static additive at a concentration that will provide not in excess of 300 conductivity units, which is approximately equivalent to one ppm.

c) Use of aviation gasoline under emergency conditions is restricted to 3 hours continuous operation at any one time, not to exceed 10 hours total cumulative time during any one hot section inspection period.

NOTE 8. These engines demonstrate satisfactory operation in icing conditions defined in Appendix C of FAR 25; also, these engines meet FAA requirements for adequate disc integrity and rotor blade containment without the need for airframe mounted armoring.

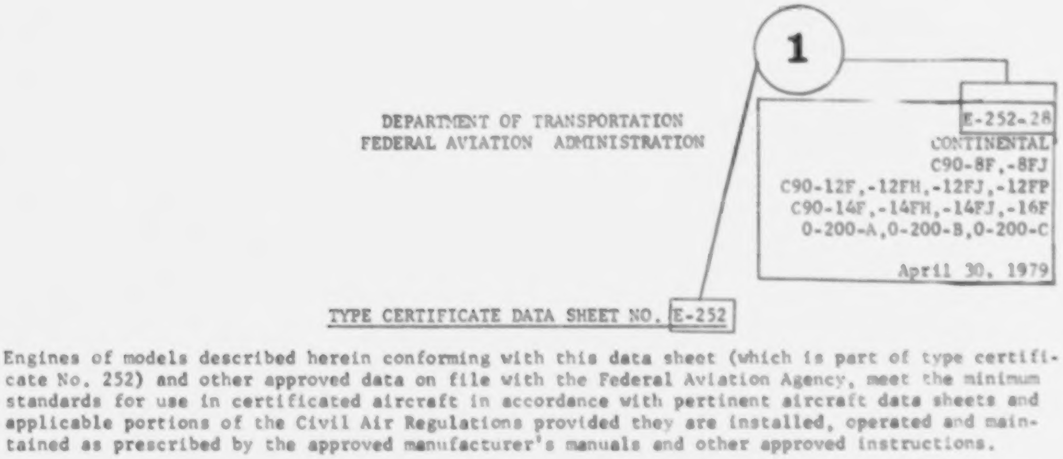
NOTE 9. Life limits established for critical rotating components are published in the CF6 Overhaul Manual, Inspection Section.

NOTE 10. Power setting, power checks and control of engine thrust output in all operations is to be based on GE engine charts referring to Fan Speed (N_1). Speed sensors are included in the engine assembly for this purpose.

... END ...

D. Reciprocating engines

The type certificate number is located in the upper right hand corner of the TCDS. The data sheet number is always the same as the type certificate number. (See number one)



DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

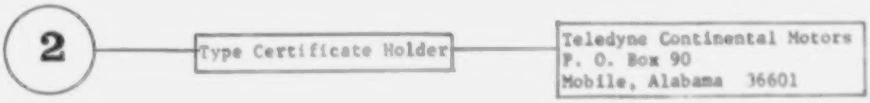
E-252-28
CONTINENTAL
C90-8F,-8FJ
C90-12F,-12FH,-12FJ,-12FP
C90-14F,-14FH,-14FJ,-16F
0-200-A,0-200-B,0-200-C

April 30, 1979

TYPE CERTIFICATE DATA SHEET NO. E-252

Engines of models described herein conforming with this data sheet (which is part of type certificate No. 252) and other approved data on file with the Federal Aviation Agency, meet the minimum standards for use in certificated aircraft in accordance with pertinent aircraft data sheets and applicable portions of the Civil Air Regulations provided they are installed, operated and maintained as prescribed by the approved manufacturer's manuals and other approved instructions.

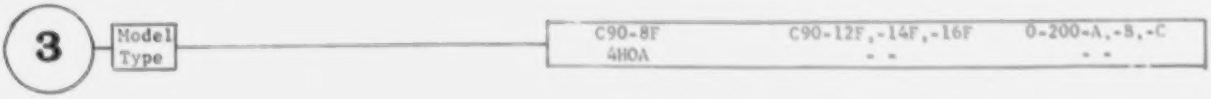
The TCDS also identifies the name and address of the type certificate holder. (See number 2)



Type Certificate Holder

Teledyne Continental Motors
P. O. Box 90
Mobile, Alabama 36601

The type certificate also lists the applicable engine models and types. (See number 3)



Model	C90-8F	C90-12F,-14F,-16F	0-200-A,-B,-C
Type	4HOA	- -	- -

TECHNICAL INFORMATION SUPPLEMENT #5

The TCDS also contains other engine specifcations applicable to the engine model stated on the TCDS. (See number 4)

④

Rating, standard atmosphere			
Max. continuous hp., r.p.m., at sea level pressure altitude	90-2475	- -	100-2750
Takeoff hp., 5 min., r.p.m., full throttle, at sea level pressure altitude	95-2625	- -	100-2750
Fuel (min. grade aviation gasoline)	80/87	- -	- -
Lubricating oil, ambient air temperature	Oil Grade		
Below 40°F.	SAE 20	- -	- -
Above 40°F.	SAE 40	- -	- -
Bore and stroke, in.	4.062 x 3.875	- -	- -
Displacement, cu. in.	201	- -	- -
Compression ratio	7:1	- -	- -
Weight (dry), lb.	184	188	190
C.G. location (with accessories)			
Fwd. of rear face of mounting lugs, in.	6.2	4.6	- -
Below crankshaft center line, in.	1.5	1.3	1.2
Propeller shaft, SAE No.	1 Flange	- -	- -
Carburetion (see NOTE 4 for injectors)	Marvel-Schebler MA-3SPA (CMC P/N 627367, 629175, 637101 or 637835)	- -	Marvel-Schebler MA-3SPA
	Bendix-Stromberg NA-S3A1 (CMC P/N 530625, 530726, 531126, 530846, 531157)	- -	(TCM P/N 627143, 640416 or 633028
Ignition	2 Bendix-Scintilla S4RN-21 or -1227; or Slick-Electro 443 or 4003 magnetos or 1 ea. Bendix-Scintilla S4RN-200 and -204	2 Bendix-Scintilla S4LN-21 or -1227 or 1 ea. S4LN-200 and -204; Slick-Electro 447, 4001 or 4201 magnetos	- -
Timing, °BTC	26 Top, 28 Bottom	- -	24 Top, 24 Bottom
Spark plugs	See NOTE 6	- -	- -
Oil sump capacity, qt.	5 or 6	- -	- -

Next is the basis for certification, the date the manufacturer applied for certification, and the date certification became effective. (See number 5)

⑤

Certification basis	Part 13 of the Civil Air Regulations. Type Certificate No. 252

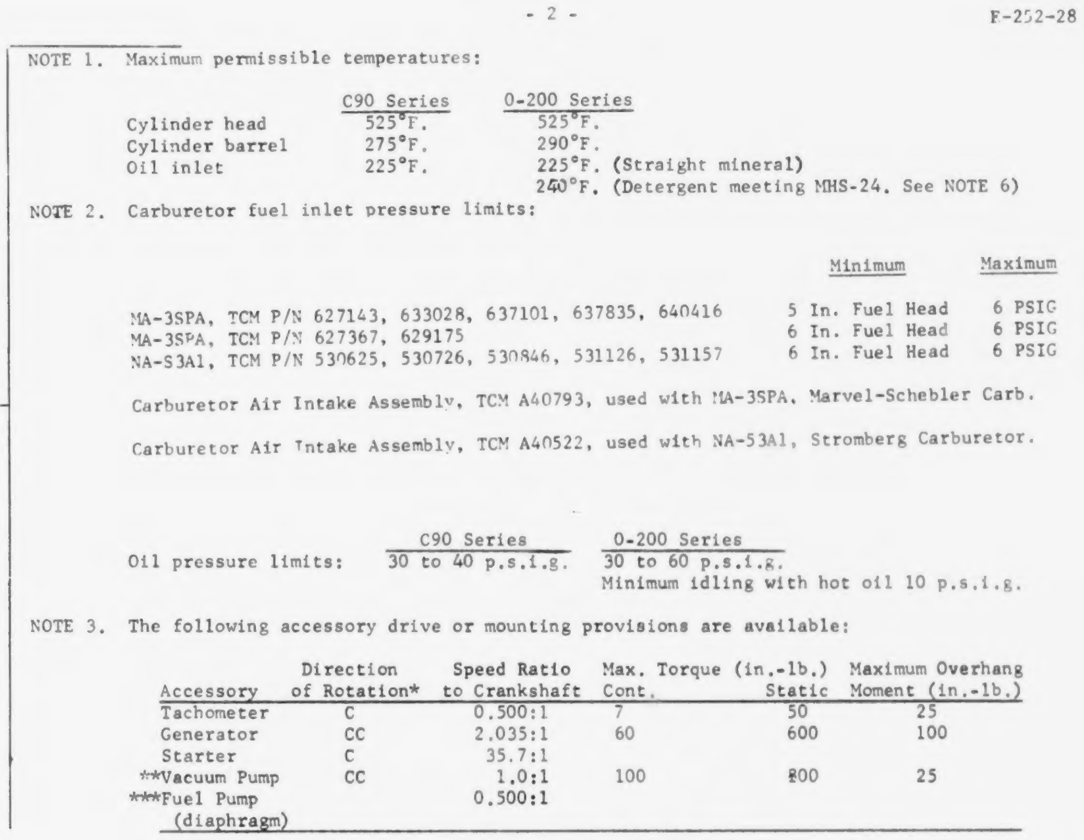
Following this is the authorization number to begin production of the engine. (See number 6)

⑥

Production basis	Production Certificate No. 7 Production Certificate No. 508 (All models except C90-16F)

TECHNICAL INFORMATION SUPPLEMENT #5

The "Notes" section contains operational limitations, accessory drive provisions, performance rating conditions, acceptable fuels, and other pertinent data. (See number 7)



- 2 - E-252-28

NOTE 1. Maximum permissible temperatures:

	C90 Series	0-200 Series
Cylinder head	525°F.	525°F.
Cylinder barrel	275°F.	290°F.
Oil inlet	225°F.	225°F. (Straight mineral) 240°F. (Detergent meeting MHS-24. See NOTE 6)

NOTE 2. Carburetor fuel inlet pressure limits:

	Minimum	Maximum
MA-3SPA, TCM P/N 627143, 633028, 637101, 637835, 640416	5 In. Fuel Head	6 PSIG
MA-3SPA, TCM P/N 627367, 629175	6 In. Fuel Head	6 PSIG
NA-S3A1, TCM P/N 530625, 530726, 530846, 531126, 531157	6 In. Fuel Head	6 PSIG

Carburetor Air Intake Assembly, TCM A40793, used with MA-3SPA, Marvel-Schebler Carb.

Carburetor Air Intake Assembly, TCM A40522, used with NA-53A1, Stromberg Carburetor.

	C90 Series	0-200 Series
Oil pressure limits:	30 to 40 p.s.i.g.	30 to 60 p.s.i.g. Minimum idling with hot oil 10 p.s.i.g.

NOTE 3. The following accessory drive or mounting provisions are available:

Accessory	Direction of Rotation*	Speed Ratio to Crankshaft	Max. Torque (in.-lb.) Cont.	Max. Torque (in.-lb.) Static	Maximum Overhang Moment (in.-lb.)
Tachometer	C	0.500:1	7	50	25
Generator	CC	2.035:1	60	600	100
Starter	C	35.7:1			
**Vacuum Pump	CC	1.0:1	100	800	25
***Fuel Pump (diaphragm)		0.500:1			

7

TECHNICAL INFORMATION SUPPLEMENT #5

①

DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

E-252-28
CONTINENTAL
C90-8F,-8FJ
C90-12F,-12FH,-12FJ,-12FP
C90-14F,-14FH,-14FJ,-16F
0-200-A,0-200-B,0-200-C

April 30, 1979

TYPE CERTIFICATE DATA SHEET NO. E-252

Engines of models described herein conforming with this data sheet (which is part of type certificate No. 252) and other approved data on file with the Federal Aviation Agency, meet the minimum standards for use in certificated aircraft in accordance with pertinent aircraft data sheets and applicable portions of the Civil Air Regulations provided they are installed, operated and maintained as prescribed by the approved manufacturer's manuals and other approved instructions.

② Type Certificate Holder

Teledyne Continental Motors
P. O. Box 90
Mobile, Alabama 36601

③ ④

Model	C90-8F	C90-12F,-14F,-16F	0-200-A,-B,-C
Type	4HOA	- -	- -
Rating, standard atmosphere			
Max. continuous hp., r.p.m., at sea level pressure altitude	90-2475	- -	100-2750
Takeoff hp., 5 min., r.p.m., full throttle, at sea level pressure altitude	95-2625	- -	100-2750
Fuel (min. grade aviation gasoline)	80/87	- -	- -
Lubricating oil, ambient air temperature	Oil Grade		
Below 40°F.	SAE 20	- -	- -
Above 40°F.	SAE 40	- -	- -
Bore and stroke, in.	4.062 x 3.875	- -	- -
Displacement, cu. in.	201	- -	- -
Compression ratio	7:1	- -	- -
Weight (dry), lb.	184	188	190
C.G. location (with accessories)			
Fwd. of rear face of mounting lugs, in.	6.2	4.6	- -
Below crankshaft center line, in.	1.5	1.3	1.2
Propeller shaft, SAE No.	1 Flange	- -	- -
Carburetion (see NOTE 4 for injectors)	Marvel-Schebler MA-3SPA (CMC P/N 627367, 629175, 637101 or 637835)	- -	Marvel-Schebler MA-3SPA
	Bendix-Stromberg NA-S3A1 (CMC P/N 530625, 530726, 531126, 530846, 531157)	- -	(TCM P/N 627143, 640416 or 633028
Ignition	2 Bendix-Scintilla S4RN-21 or -1227; or Slick-Electro 443 or 4003 magnetos or 1 ea. Bendix-Scintilla S4RN-200 and -204	2 Bendix-Scintilla S4LN-21 or -1227 or 1 ea. S4LN-200 and -204; Slick-Electro 447, 4001 or 4201 magnetos	- -
Timing, °BTC	26 Top, 28 Bottom	- -	24 Top, 24 Bottom
Spark plugs	See NOTE 6	- -	- -
Oil sump capacity, qt.	5 or 6	- -	- -
NOTES	1 thru 6	1,2,3,4,6	1,2,3,4,6

"- -" indicates "same as preceding model"

⑤ Certification basis	Part 13 of the Civil Air Regulations. Type Certificate No. 252
⑥ Production basis	Production Certificate No. 7 Production Certificate No. 508 (All models except C90-16F)

Page No.	1	2	3
Rev. No.	28	28	26

NOTE 1. Maximum permissible temperatures:

	C90 Series	0-200 Series
Cylinder head	525°F.	525°F.
Cylinder barrel	275°F.	290°F.
Oil inlet	225°F.	225°F. (Straight mineral) 240°F. (Detergent meeting MHS-24. See NOTE 6)

NOTE 2. Carburetor fuel inlet pressure limits:

	Minimum	Maximum
MA-3SPA, TCM P/N 627143, 633028, 637101, 637835, 640416	5 In. Fuel Head	6 PSIG
MA-3SPA, TCM P/N 627367, 629175	6 In. Fuel Head	6 PSIG
NA-S3A1, TCM P/N 530625, 530726, 530846, 531126, 531157	6 In. Fuel Head	6 PSIG

Carburetor Air Intake Assembly, TCM A40793, used with MA-3SPA, Marvel-Schebler Carb.

Carburetor Air Intake Assembly, TCM A40522, used with NA-S3A1, Stromberg Carburetor.

	C90 Series	0-200 Series
Oil pressure limits:	30 to 40 p.s.i.g.	30 to 60 p.s.i.g. Minimum idling with hot oil 10 p.s.i.g.

7

NOTE 3. The following accessory drive or mounting provisions are available:

Accessory	Direction of Rotation*	Speed Ratio to Crankshaft	Max. Torque (in.-lb.) Cont.	Static	Maximum Overhang Moment (in.-lb.)
Tachometer	C	0.500:1	7	50	25
Generator	CC	2.035:1	60	600	100
Starter	C	35.7:1			
**Vacuum Pump	CC	1.0:1	100	800	25
***Fuel Pump (diaphragm)		0.500:1			

Accessories previously listed in NOTE 3 are satisfactory for continued use with C90 Series engines.

*C - Clockwise viewing drive pad; CC - Counterclockwise.

**C90-16F and 0-200 Series engines only.

***CMC Eq. 5809 incorporating CMC P/N 40585 pump approved as part of type design of the 0-200 Series engine. AC fuel pump, CMC P/N 631391, available as optional equipment on C90-16F.

NOTE 4. The C90-8F is identical to the C90-12F model except that the accessory section does not incorporate provisions for generator and starter drives.
The C90-14 models incorporate Lord type engine mounts which are not interchangeable with C90-12 models due to different machining of the engine mounting lugs on the engine crankcase.
The C90-16F is similar to the C90-12F except that vacuum pump drive provisions have been added.
The Model 0-200-B is similar to the 0-200-A except for special crankshaft and crankcase providing for thrust application toward the engine only.
The Model 0-200-C is similar to the 0-200-A except for incorporation of provisions to supply oil pressure to a controllable pitch propeller through the crankshaft from an external boss on the crankcase.
Those C90 Series models listed in the heading of this data sheet, suffixed by letters H, J and P, differ from the basic model designation as follows:
"H" denotes a special SAE No. 1 flange crankshaft and special crankcase for the installation of a hydraulically operated controllable pitch propeller requiring oil supply through the crankshaft.
"J" denotes incorporation of Model B-46 Ex-Cell-O fuel injector, P/N 530499, or American Bosch Model PGC-4A-95A2, P/N 534505, at a weight increase of 4 lb. over the corresponding carburetor equipped engine.
"P" denotes pusher installation incorporating special crankshaft and thrust bearing.
Oil sump gauge rods will be marked as per installer's requirements.

NOTE 5. Bendix-Stromberg NA-S3A1 carburetor, P/N 530726, eligible only on Piper PA-11 airplanes equipped with Piper mufflers.

NOTE 6. Detergent oil meeting Continental Specification MHS-24 required when using 240°F oil inlet limits except during break-in period. Follow manufacturer's instructions for break-in or when changing oil types. Marking or placards prescribing use of Continental Specification MHS-24 oil only shall be installed on or near the oil filler on installations using 240°F oil inlet temperatures.

NOTE 7. The following spark plugs are approved for use on engine models as indicated:

⑦

C90-8F, -12F, -14F, -16F

AC	HSR83IR, SR83IR, HSR83P, SR83P, A88, HS88, HSR88, S88, S88D, HSR88, SR88, SR88D, HSR93, SR93
Auto Lite	18A1,BR4, BR4S, BR4SB, SH15, H15, SH15R, SH20A, SH150, SH200A
BG	RB485S, 706, 706R, 706S, 706SR, 919SR5, RB955S
Champion	C26, C26S, C27, C27S, RC27S, REM38P, REM38W, RHM38P, RHM38W, REM40E, RHM40E, ED41N, D41N, EM41E, EM41N, HM41E, M41E, M41N, EM42E, M42E
Red Seal	SA190, SE190, SJ190, SE230, SJ230

0-200-A, -B, -C

AC	HSR83IR, SR83IR, HSR83P, SR83P, A88, HS88, HSR88, S88, S88D, SR88, SR88D, HSR93, SR93
Auto Lite	18A1, SH15, H15, SH15R, SH20A, SH150, SH200A
BG	RB485S, 706, 706S, 919SR5, RB955S
Champion	C27, C27S, RC27S, REM38P, REM38W, RHM38P, RHM38W, REM40E, RHM40E, ED41N, D41N, EM41E, EM41N, HM41E, M41E, M41N, EM42E, M42E
Red Seal	SA190, SE190, SJ190, SE230, SJ230

... END ...

TECHNICAL INFORMATION SUPPLEMENT #6 - Supplemental Type Certificates, Parts Manufacturers' Approvals, and Technical Standard Orders

FAA approval must be secured to manufacture a certificated aircraft, aircraft engine, or propeller. This is usually done by a type certificate. When improvements or changes are made in the aircraft design, construction, or performance, the person desiring to make the improvements or changes must apply to the FAA for a Supplemental Type Certificate (STC).

A supplemental type certificate authorizes an alteration to an airframe, aircraft engine, or component which has been granted an Approved Type Certificate (ATC). The FAA, upon evaluation of the requested improvements or changes, may issue an STC which then becomes an approved alteration to the product.

A major part of the STC will be the written instructions for proper compliance. This information forms the basis for accomplishing the alterations and the inspection for conformity.

Any person may apply for an STC and when issued, it becomes the sole property of that person. The STC may or may not be offered for sale to the public.

If an alteration requires the manufacture of parts or components, it may also be necessary to apply for a Parts Manufacturers Approval (PMA). The FAA will issue a PMA when satisfied that the design, production staff, and manufacturing facility meet proper standards. This allows the manufacturer to mark a product with an FAA-PMA symbol. It authorizes only the holder of the PMA to manufacture the part, assuring the installing agency that the part meets airworthiness standards.

FAR Part 21 Subpart O and FAR 37 prescribes the requirements for the issue of Technical Standard Order authorizations. TSO's contain minimum performance and quality control standards for specified materials, parts, or appliances used on civil aircraft. An article produced under a TSO authorization is considered to be an approved part.

GENERAL
G103 FUNDAMENTALS OF REGULATIONS, PUBLICATIONS, AND RECORDS
SELECT AND USE REGULATIONS, PUBLICATIONS, AND RECORDS
G103-A

TECHNICAL INFORMATION SUPPLEMENT #7 - Airworthiness Directives

Due to inspection and maintenance requirements, aircraft tend to stay in service longer than many common vehicles. After an aircraft has been placed in service, certain deficiencies that may affect its safe operation could appear.

FAR Part 39 prescribes airworthiness directives that apply to aircraft, aircraft engines, propellers, or appliances (hereinafter referred to as products) when an unsafe condition exists in a product, and that condition is likely to exist or develop in other products of the same type design.

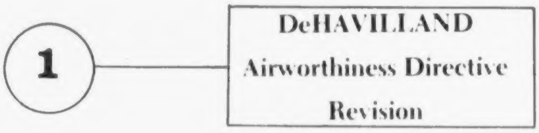
ADs are mailed to the registered owners and they are published in the Federal Register. Most of the individuals involved in aircraft maintenance will receive their notice of airworthiness directives through a subscription service available through the FAA. Every two years the FAA publishes a summary of all current and effective AD notes. The purchase of this summary includes a subscription to biweekly supplements of new or revised AD notes until the next summary is published. The biweekly supplement is the source of the AD number.

Airworthiness directives may be issued as a result of problems discovered at the factory or because of accident investigation, or from owners, operators, pilots, or mechanics in the form of a Malfunction or Defects Report. They are valid until cancelled by the FAA.

The registered owner or operator of an aircraft is required to maintain accurate records, which include AD compliance. Maintenance personnel must carefully follow the AD instructions, especially when recurrent inspection is required. Maintenance record entries must show only that part of the AD which was actually accomplished, as well as certificate numbers and signature of the person complying.

Following is an example of an airworthiness directive and its contents. The general sections of an AD are identified by the numbers one through 7.

The index information contains the manufacturer name, the title, airworthiness directive, and indicates if the AD is a revision. (See number one.)



TECHNICAL INFORMATION SUPPLEMENT #7

An AD is identified by an AD number. The first two digits of the six-digit code indicate the year the AD was issued, the second two digits indicate the number of the biweekly period of the year, beginning with January 1. The last two digits represent the order in which the directive was issued during that particular biweekly period. The letter "R" following the last two digits means the AD is a revision. Always use the most current effective date to update your summary of ADs. (See number 2.)

② 80-13-12 R1

The manufacturer's product name is followed by the aircraft serial number, and the applicable categories. (See number 3.)

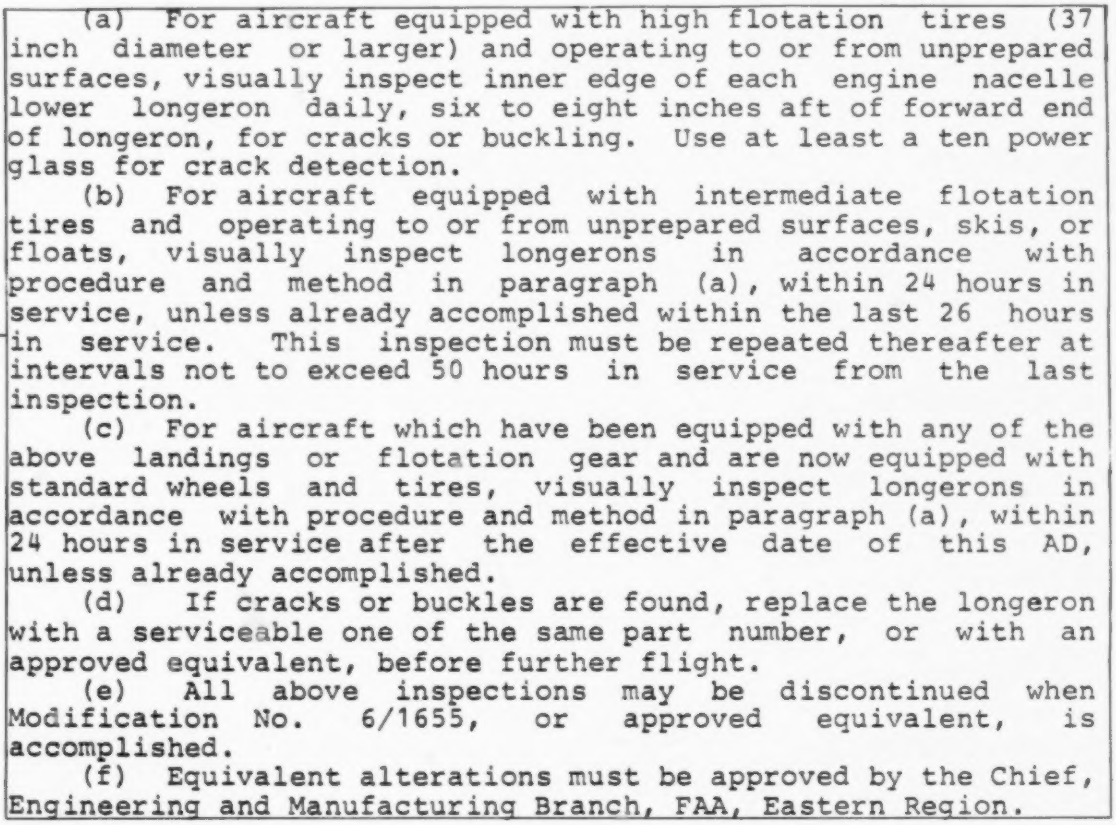
③ DEHAVILLAND: Amendment 39-3815 as amended by Amendment 39-4135. Applies to all DHC-6 model airplanes, Serial Numbers 1 thru 631, equipped with intermediate or high flotation tires, skis, or floats, certificated in all categories.

The AD also includes a statement of the problem, hazard, failure, or possibility of failure. (See number 4.)

④ To prevent possible failure of the engine nacelle lower longerons due to cracking or buckling, accomplish the following:

Also included in the AD is the required action needed. It may be in the form of an inspection, replacement of parts, modification of design, or changes in the operating procedures of the aircraft. The required action may be totally described in the AD or reference may be made to the manufacturer's service manual which will give the details of the required action. The required action may call for notification of the FAA upon compliance or other special record entries in the aircraft, aircraft engine, or propeller maintenance records. The action may call for recurring inspections or other action until certain parts are replaced or modified. (See number 5.)

5



(a) For aircraft equipped with high flotation tires (37 inch diameter or larger) and operating to or from unprepared surfaces, visually inspect inner edge of each engine nacelle lower longeron daily, six to eight inches aft of forward end of longeron, for cracks or buckling. Use at least a ten power glass for crack detection.

(b) For aircraft equipped with intermediate flotation tires and operating to or from unprepared surfaces, skis, or floats, visually inspect longerons in accordance with procedure and method in paragraph (a), within 24 hours in service, unless already accomplished within the last 26 hours in service. This inspection must be repeated thereafter at intervals not to exceed 50 hours in service from the last inspection.

(c) For aircraft which have been equipped with any of the above landings or flotation gear and are now equipped with standard wheels and tires, visually inspect longerons in accordance with procedure and method in paragraph (a), within 24 hours in service after the effective date of this AD, unless already accomplished.

(d) If cracks or buckles are found, replace the longeron with a serviceable one of the same part number, or with an approved equivalent, before further flight.

(e) All above inspections may be discontinued when Modification No. 6/1655, or approved equivalent, is accomplished.

(f) Equivalent alterations must be approved by the Chief, Engineering and Manufacturing Branch, FAA, Eastern Region.

TECHNICAL INFORMATION SUPPLEMENT #7

Many ADs will contain the name of the FAA region that has originated the AD information and whom to contact for more information. (See number 6.)

*⑥

> (g) Compliance times may be increased by the Chief, Engineering and Manufacturing Branch, FAA, Eastern Region, upon receipt of substantiating data submitted through an FAA Maintenance Inspector.

* FOR FURTHER INFORMATION CONTACT:

C. Birkenholz, Airframe Section, AEA-212, Engineering and Manufacturing Branch, Federal Building, J.F.K. International Airport, Jamaica, New York 11430; telephone (212) 995-2875.

The effective date of the AD is usually published toward the end of the note. In case of a revision the effective date of the revision, as well as the date of the original amendment, is given. (See number 7.)

⑦

> Amendment 39-3815 was effective July 1, 1980.
> This amendment 39-4135 is effective June 19, 1981.

1 **DeHAVILLAND**
Airworthiness Directive
Revision

2 80-13-12 R1

3 DEHAVILLAND: Amendment 39-3815 as amended by Amendment 39-4135. Applies to all DHC-6 model airplanes, Serial Numbers 1 thru 631, equipped with intermediate or high flotation tires, skis, or floats, certificated in all categories.

4 To prevent possible failure of the engine nacelle lower longerons due to cracking or buckling, accomplish the following:

5 (a) For aircraft equipped with high flotation tires (37 inch diameter or larger) and operating to or from unprepared surfaces, visually inspect inner edge of each engine nacelle lower longeron daily, six to eight inches aft of forward end of longeron, for cracks or buckling. Use at least a ten power glass for crack detection.

(b) For aircraft equipped with intermediate flotation tires and operating to or from unprepared surfaces, skis, or floats, visually inspect longerons in accordance with procedure and method in paragraph (a), within 24 hours in service, unless already accomplished within the last 26 hours in service. This inspection must be repeated thereafter at intervals not to exceed 50 hours in service from the last inspection.

(c) For aircraft which have been equipped with any of the above landings or flotation gear and are now equipped with standard wheels and tires, visually inspect longerons in accordance with procedure and method in paragraph (a), within 24 hours in service after the effective date of this AD, unless already accomplished.

(d) If cracks or buckles are found, replace the longeron with a serviceable one of the same part number, or with an approved equivalent, before further flight.

(e) All above inspections may be discontinued when Modification No. 6/1655, or approved equivalent, is accomplished.

(f) Equivalent alterations must be approved by the Chief, Engineering and Manufacturing Branch, FAA, Eastern Region.

*6 (g) Compliance times may be increased by the Chief, Engineering and Manufacturing Branch, FAA, Eastern Region, upon receipt of substantiating data submitted through an FAA Maintenance Inspector.

7 Amendment 39-3815 was effective July 1, 1980.
This amendment 39-4135 is effective June 19, 1981.

* FOR FURTHER INFORMATION CONTACT:

C. Birkenholz, Airframe Section, AEA-212, Engineering and Manufacturing Branch, Federal Building, J.F.K. International Airport, Jamaica, New York 11430; telephone (212) 995-2875.

TECHNICAL INFORMATION SUPPLEMENT #8 - Manufacturers' Publications

The maintenance technician's job is to keep the aircraft he or she is responsible for in the best possible condition, regardless of the aircraft's use or age. The FAA and the manufacturer work cooperatively with maintenance technicians to distribute information on improvements, changes, or procedures that will help keep the aircraft in airworthy condition. Manufacturers produce a number of publications which contain specific information relative to their products. The most common of these include:

A. Manuals

1. Service or maintenance manuals contain recommended procedures and instructions for servicing and maintaining aircraft.

2. Overhaul manuals contain guidance for operation and overhaul of aircraft engines or accessories.

   (NOTE: Older service or maintenance manuals contain guidance for operation and maintenance information. However, newer manuals will not contain operation or maintenance information.)

3. Structural repair manuals contain guidance for repair of airframe components.

B. Service letters and service bulletins supplement and update manuals in the interest of maximum safety and utility and advise of important changes in parts, precautions for operation or maintenance, and desirable inspections.

C. Illustrated parts catalogs contain detailed information regarding application, interchangability, part numbers, quantities, and availability of aircraft parts.

Following is an example of a manufacturer's service bulletin, manufacturer's service letter, an excerpt from a manufacturer's service manual, a manufacturer's overhaul manual, and a manufacturer's parts catalog.

TECHNICAL INFORMATION SUPPLEMENT #8

AVCO LYCOMING DIVISION
WILLIAMSPORT, PA. 17701

Service Bulletin

(L)

DATE: May 21, 1971

Service Bulletin No. 333
Engineering Aspects are
FAA (DEER) Approved

SUBJECT: Counterweight Inspection and Replacement

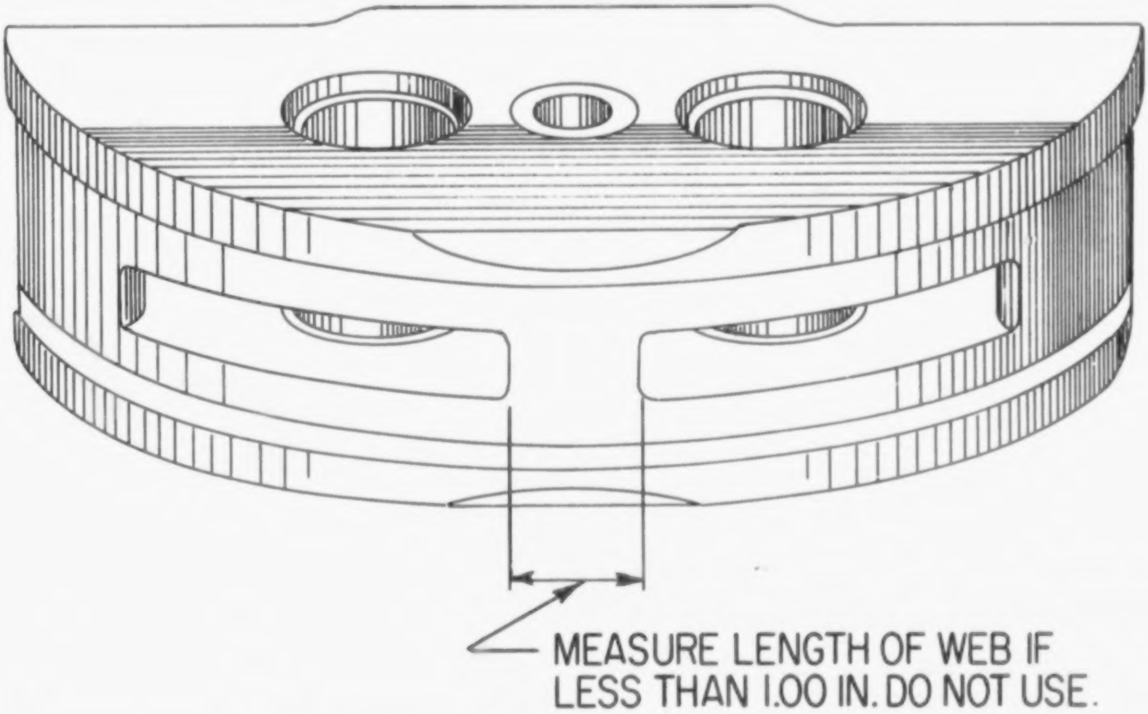
MODELS AFFECTED: IGSO-540 series engines employing 72534 counterweight assemblies.

TIME OF COMPLIANCE: At next overhaul.

Avco Lycoming P/N 72534 counterweight assembly has been improved by increasing the length of the center web from 0.75 inch to 1.00/1.06 inch. See figure. This increase in length strengthens the counterweight in the area of the center web.

At next overhaul the following inspection is required. During required overhaul inspection procedures, the center web of the counterweight must be measured. Using outside calipers, measure length of center web as shown in the illustration. If the length measured is 1.00 inch to 1.06 inch, the counterweight may be returned to service provided it meets all other inspection requirements. However if the measurement is less than 1.00 inch, the counterweight must be replaced.

Replacement counterweights, Avco Lycoming P/N 72534, incorporating the strengthened center web, are available through all Avco Lycoming distributors. The obsolete counterweights must be returned along with the engine serial number. A special exchange price for the replacement counterweights will be offered by the distributor.



Bottom View of Counterweight Showing Web to be Measured

Used with permission of AVCO, Lycoming Division.

March 6, 1964 Service Instruction No. 1087A

AERO COMMANDER

SERVICE LETTER

AERO COMMANDER, INC.
BETHANY, OKLAHOMA
ROCKWELL-STANDARD

SERVICE LETTER NO. 147 **DATE:** August 7, 1963

EFFECTIVITY: AERO COMMANDER MODELS 680F, 680FP, AND GRAND COMMANDER WITH FACTORY SERIAL NUMBERS 871 THROUGH 1351.

COMPLIANCE: AS REQUIRED.

SUBJECT: RESETTING FUEL BOOST PUMP PRESSURE.

APPROVAL: DAR 2-201 For F. A. A. For Engr. Dept. For Service Dept.

PURPOSE: To provide owners and operators of affected aircraft with instructions for resetting boost pump pressure in conjunction with Lycoming Service Instruction 1087 which describes the installation of fuel pressure regulators on Simmonds fuel injectors.

INSTRUCTIONS:

a. Disconnect the fuel supply line at the Simmonds fuel injector pump and connect a calibrated gage to the line.
b. Apply an external power source of 28.5 volts to obtain normal output of fuel boost pump.
c. Pressure check fuel system for leakage.
d. Set boost pump pressure to read 23 ± 1 psi on calibrated gage.

CAUTION

Calibrated gage must be positioned at same height as boost pump.

e. Remove the calibrated gage and reconnect the fuel supply line to the Simmonds fuel injector pump.
f. Pressure check fuel system for leakage.
g. Repeat steps a. through f. for fuel boost pump on opposite engine.
h. Install fuel pressure regulator on both right and left engines in accordance with instructions provided in Lycoming Service Instruction 1087.
i. Start and warm up engines sufficiently to ensure all gages are in the green area.
j. Turn on boost pump. Check to ensure that fuel pressure reflects a definite increase and stabilizes between 23 and 35 psi.
k. Repeat preceding step for opposite boost pump.
l. Complete Log Book entry as follows: Service Letter No. 147, dated August 7, 1963, entitled "Resetting Fuel Boost Pump Pressure" accomplished ______ (date) ______

SUPPLY DATA: Not Applicable.

WEIGHT AND BALANCE DATA:

The weight and balance change resulting from compliance with this Service Letter is negligible.

NOTE: Revision "A" to Service Instruction No. 1087 adds STD-1927 to kit and instructions for overboard vent provision, Figure 2 corrected, Figure 3 replaced.

Reprinted with permission of Aero Commander, Inc., Bethany, Oklahoma.

filler neck and quantity dipstick cap which protrude through the accessory gear-case at the eleven o'clock position. The dipstick is marked in U. S. quarts and indicates the amount of oil required to fill the tank. Access to the dipstick cap is gained by opening the aft engine cowl. Service the oil system with oil as specified in Item 2 of the Consumable Materials Chart. Do not mix the oil brands. Oil tank capacity is 2.3 U. S. gallons with approximately 3 quarts required to fill the lines and cooler giving a total system capacity of 12 quarts.

CAUTION

Remove spilled oil immediately to prevent the surface thus contaminated from causing tire damage.

OIL FILTER CHANGING

The engine oil filter uses a cartridge-type disposable element. It is located under the square cover plate at the three o'clock position of the compressor inlet case and just behind the aft fire seal. The filter element may be changed as follows:

a. Remove the four self-locking nuts and plain washers securing the filter cover to the compressor inlet case and remove the cover.

b. Withdraw the element from the filter housing. Inspect the filter element for the presence of foreign particles.

c. Insert a new filter element in the filter housing.

d. Coat a new "O" ring seal with engine oil and install the seal and cover on the engine.

e. Secure the filter cover with four plain washers and self-locking nuts. Before tightening the nuts, set the power lever in "CUT OFF" and adjust the power lever control bracket to impose a slight pre-load on the fuel control in the "cut off" direction. To prevent bracket slippage and subsequent incomplete "cut off," torque the nuts to between 20 and 30 inch-pounds above the torque necessary to turn the nuts before seating.

CAUTION

On airplanes with the power control cable bracket mounted on the oil filter cover plate, check for proper power control rigging after the oil filter has been replaced.

CHANGING THE ENGINE OIL

a. Remove the screws securing the gang drain and oil breather line to the sides of the oil cooler outlet air duct.

b. Remove the screws securing the duct to the cowl and remove the duct.

c. Remove the cotter pin from the oil plug retaining pin.

d. Position the oil drain funnel under the oil plug.

e. Remove the drain plug retaining pin and pull the drain plug from the engine. Allow all oil to drain from the engine.

f. With the drain plug removed, motor the engine over with the starter only (no ignition) to permit the scavenge pumps to clear the engine.

CAUTION

Limit the engine motoring duration to the shortest possible time to accomplish the above as the engine will have limited lubrication. Also, leave the power lever in IDLE CUT-OFF to prevent damage to the fuel control unit.

g. Install a new oil filter element as described in Changing the Oil Filter.

h. Coat a new "O" ring seal with engine oil and install it on the engine drain plug.

i. Insert the drain plug into the engine and install the plug retaining pin. Make sure a new cotter pin is installed in the drain plug retaining pin.

j. Fill the engine with the correct amount and type of oil as specified in Oil System Servicing.

k. Motor the engine over, with the starter only, long enough to get an oil pressure reading.

CAUTION

Do not exceed the starter motor operating time limits (2 minutes).

l. Check the engine for oil leaks.

m. Refill the engine to the proper level ("FULL" mark on the dipstick).

n. Position the oil cooler outlet air duct in the cowling and install the retaining screws.

o. Position the gang drain and engine breather line on the sides of the air duct and install the retaining screws.

AIRCRAFT FINISH CARE

Because it is impervious to synthetic oil and most solvents and has excellent abrasion resistance, epoxy paint is used on the King Air exterior. Epoxy paint is necessary because the turbine oil used in the PT-6

Used with permission of AVCO, Lycoming Division.

WARNING

> Do not unscrew the air valve assembly until all air pressure has been released or it may be blown off with considerable force, causing injury to personnel or property damage.

b. With the weight of the airplane on the gear, loosen the filler plug slowly to assure that all air has escaped, then remove the filler plug.

c. With the shock strut fully deflated, raise the strut barrel so that it is 1/4 inch (nose gear strut) or 1 to 2 inches (main gear strut) from the fully compressed position.

d. Fill the strut to the level of the filler plug with MIL-H-5606 hydraulic fluid. Lower the strut barrel and with the strut in the fully compressed position allow the excess fluid to drain out.

e. Clean and install the filler plug and inflate the strut. On airplanes D-1 thru D-1500, the nose gear shock strut should be inflated until 2-1/2 inches of piston is exposed: on airplanes D-1501 thru D-6561 there should be 3-1/16 inches of piston exposed; on airplanes D-6562 and after the amount of exposed piston is 3-1/2 inches. The main gear shock strut should be inflated until 2-5/8 inches of piston is exposed on airplanes D-1 thru D-1500. On airplanes D-1501 thru D-2680 there should be 3-9/32 inches of exposed piston and on airplanes D-2681 and after, the shock struts should be inflated until 3 inches of the pistons are exposed.

CAUTION

> If a compressed air bottle containing air under extremely high pressure is used, care should be taken not to overinflate the strut.

f. Rock the airplane gently to prevent sticking or binding the strut.

g. Remove all foreign material from the exposed piston of the shock strut with a cloth moistened with hydraulic fluid.

SERVICING THE SHIMMY DAMPENER.

To check the fluid level in the shimmy dampener, insert a wire of approximately 1/16-inch diameter through the hole in the disc at the end of the piston rod until it touches the bottom of the hole in the floating piston. Mark the wire, remove and measure the depth of insertion. Inserting the wire in the hole of the floating piston, rather than letting it rest against the face of the piston, will give a more accurate check.

NOTE

> To determine if the wire is inserted in the hole of the floating piston, insert the wire several times, noting each insertion depth. When the wire is correctly inserted the length will be approximately 1/4 inch greater.

When the shimmy dampener is full, the insertion depth is 2-3/16 inches. The empty reading is 3-1/16 inches. To add MIL-H-5606 hydraulic fluid remove the shimmy dampener and proceed as follows:

a. Secure the shimmy dampener in a fixed position with the clevis end down.

b. Remove the cotter pin, washer, and spring, from the piston rod. Remove with care as the spring is compressed.

c. Remove the internal snap ring, scraper ring and the end seal from the aft end of the barrel (opposite clevis end).

d. Insert a 6-32 threaded rod into the floating piston and remove the piston.

e. Push the piston rod to the end of its travel toward the clevis end and fill the barrel with MIL-H-5606 hydraulic fluid.

f. Slowly actuate the piston rod, allowing the fluid to flow into the clevis end chamber, then return the piston to the clevis end of the barrel.

g. Refill the displaced fluid and replace the end seal, scraper ring and internal snap ring.

h. Insert the 6-32 threaded rod through the clevis end of the piston rod and engage the lower floating piston. Pull the floating piston to the end of its travel toward the clevis end and secure in that position.

i. Fill the piston rod with fluid.

j. Reinstall the floating piston, spring, washer and cotter pin. Spread the cotter pin to allow clearance for the measuring wire.

k. Release the 6-32 rod and remove it from the floating piston.

SERVICING THE BRAKE SYSTEM.

The Model 35 hydraulic brakes are self-compensating and require no adjustment. Linings should be checked for small nicks or sharp edges which could damage the brake discs. Worn, dished or distorted brake discs should be replaced. The brake fluid is supplied to the brake system from the reservoir tank located in the engine accessory section and is accessible by raising the right side of the engine cowl. The reservoir should be filled to within 1-1/2 inches of the top and a visible fluid level should be maintained at all times. Use only MIL-H-5606 hydraulic fluid in the brake system. Ensure that no dirt or foreign matter is allowed to get in the system. See Section 3 for bleeding the brake system.

SERVICING TIRES

The nose wheel tire is a 5.00-5 4-ply tire. The main wheel tires are 6.50-8 4-ply prior to airplane serial D-7725 and 7.00-6 6-ply tires airplane serials D-7725 and after.

CAUTION

> Tires that have picked up a fuel or oil film must be washed down as soon as possible with a detergent solution to prevent contamination of the rubber.

Maintaining proper tire inflation will help to avoid damage from landing shock and will minimize tread wear and aid in preventing tire rupture caused from running over sharp

SECTION 2.

GENERAL DESCRIPTION

Description of Engine Model Code

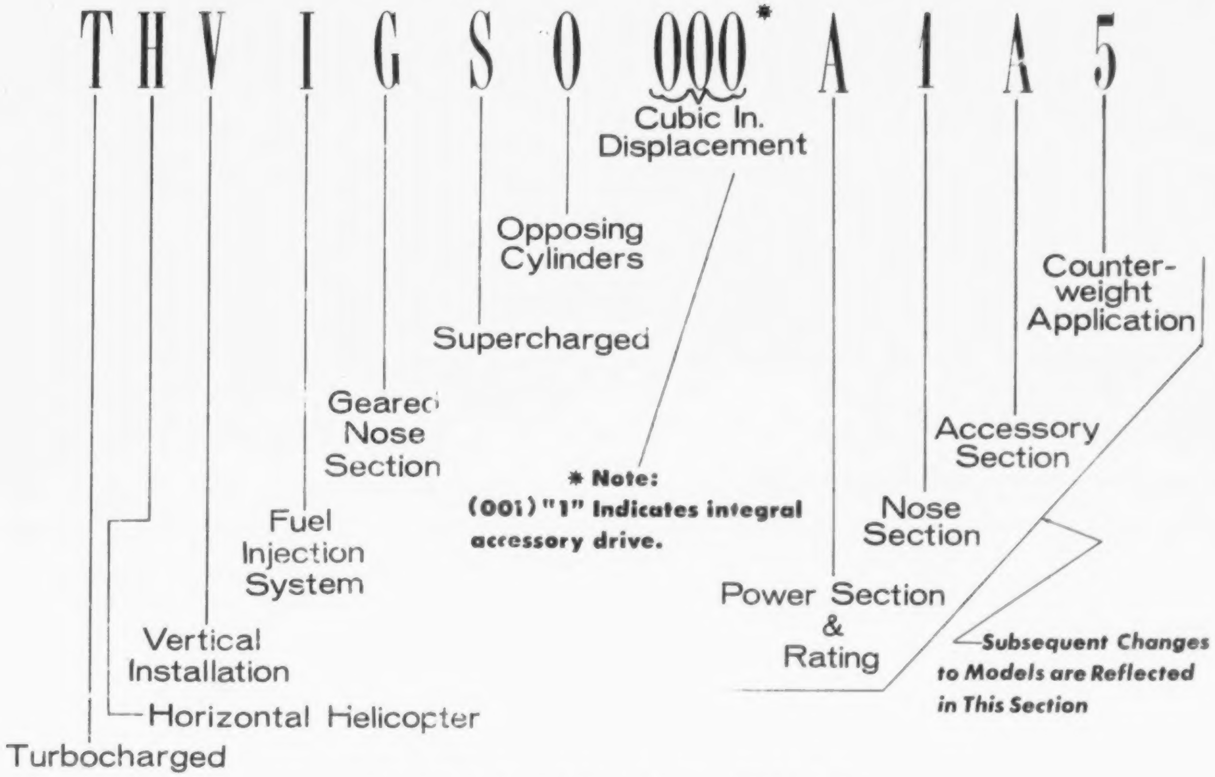

T H V I G S O 000* A 1 A 5
Cubic In. Displacement
Opposing Cylinders
Supercharged
Geared Nose Section
Fuel Injection System
Vertical Installation
Horizontal Helicopter
Turbocharged
* Note: (001) "1" Indicates integral accessory drive.
Counter-weight Application
Accessory Section
Nose Section
Power Section & Rating
Subsequent Changes to Models are Reflected in This Section

Figure 2-1. Description of Engine Model Code

2-1. This manual is designed to cover the overhaul of all Avco Lycoming integral accessory drive engines. The subject engines are horizontally opposed, wet sump, air cooled models.

2-2. CYLINDERS. The cylinders are of air-cooled construction with the major parts, head and barrel, screwed and shrunk together. The heads are made from an aluminum alloy casting with a fully machined combustion chamber. Valve guides and valve seats are shrunk into machined recesses in the head. Rocker shaft bearing supports are cast integrally with the head along with housings to form the rocker boxes for both exhaust and intake valve rockers. Valve rockers are placed at an angle in the head. Intake ports are located in the upper side of the cylinder and the exhaust ports on the lower side.

2-3. The cylinder barrels are machined from a chrome nickel molybdenum steel forging with deep integral cooling fins. The interior of the barrels are ground and honed to a specified finish.

2-4. Avco Lycoming incorporates a color code painted on cylinder heads designating differences in the cylinder barrels and spark plug lengths. It is essential that personnel be familiar with this code as described in the latest edition of Service Instruction No. 1181.

2-5. Damage will result with the use of incorrect piston rings or spark plug lengths. The latest edition of Service Instruction No. 1037 lists the approved piston, piston ring and cylinder assemblies for all models while the latest edition of Service Instruction No. 1042

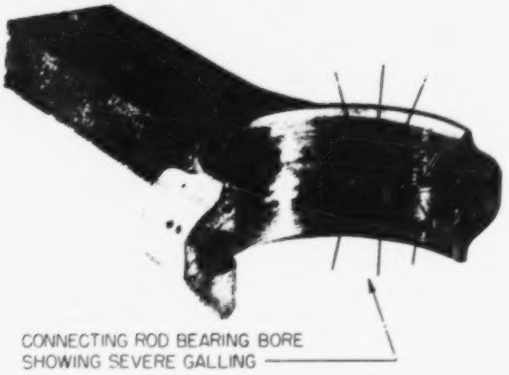
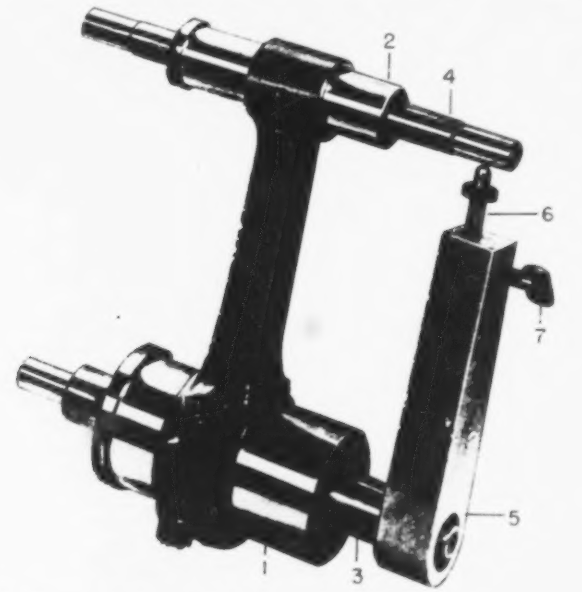


Figure 8-15. Connecting Rod Showing Damage by Galling

8-65. Assemble two new connecting rod bolts in each connecting rod cap and install new bearing inserts in the connecting rods and connecting rod caps, making sure the tang on each bearing insert enters locating slot in cap and connecting rod. Assemble each connecting rod assembly after installing inserts; tighten bolt nuts moderately tight. Measure the ID of each bearing and check for clearance against measurements taken previously on diameter of crankpin journals.



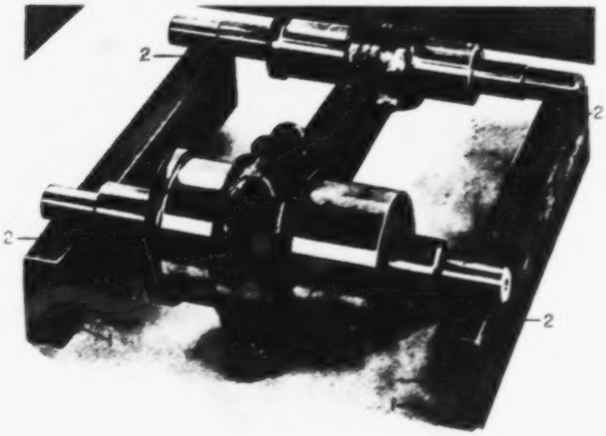
1. Tapered sleeve
2. Tapered sleeve
3. Arbor
4. Arbor
5. Gage arm
6. Adjusting screw
7. Wing nut

Figure 8-16. Checking Parallelism of Conn. Rod

NOTE

Connecting rods are marked at manufacture with the part number followed by a letter (A through E) designating weight groups. It is recommended that replacement sets of rods be of the same weight classification. Individual rods may be replaced by a service rod bearing the letter "S".

8-66. Place the crankshaft on a suitable support on bench so that all crankpins are free for installation of connecting rods. Disassemble connecting rods after checking bearing ID, thoroughly coat both the inserts and the crankpin journals with preservative oil, and assemble rods on their respective crankpins. The order of assembly should be such that the numbers stamped on the caps and on the rods will be down (toward sump).



1. Parallel blocks
2. Check points

Figure 8-17. Checking Squareness of Connecting Rod

8-67. Using a socket wrench, alternately tighten the connecting rod nuts and check rod bolt stretch with the stretch bolt gage (64945). Continue to tighten until bolts are stretched to 2.255/2.256 inches. Then employing crimping tool (ST-78) crimp the connecting rod bolt nuts. If the stretch limit of 2.256 inch is exceeded, the connecting rod bolt must be replaced. Check the connecting rod side clearance according to Table of Limits.

8-68. CAMSHAFT. (TIO-541). See figure 8-3. Assemble propeller governor drive gear (23) and secure with criclips (27). Assemble camshaft gear (18) and secure with lockplate (17) and hex head bolts (15).

8-69. (TIGO-541). See figure 8-4. Assemble camshaft gear (17) and secure with lockplate (16) and hex head bolts (15).

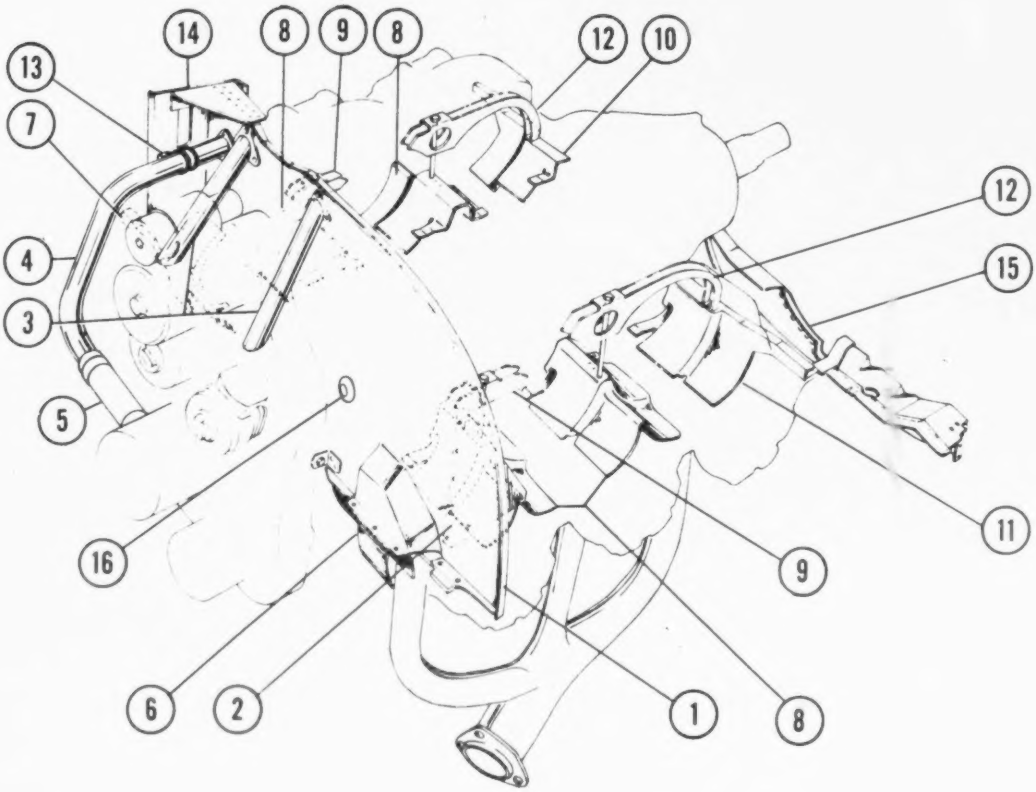


Figure 74. Engine Baffles

FIG. & INDEX NO.	PART NO.	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE
74 - 1	35-910262.	BAFFLE ASSY,REAR /SEE FIG. 72 FOR NHA/.	1	A4BCDEFG
- 2	35-910258	. BRACKET,RH REAR SUPPORT	1	A4BCDEFG
- 3	35-910257	. TUBE,MAGENTO BLAST.	2	A4BCDEFG
	35-910256	. TUBE,GENERATOR BLAST.	1	A12
- 4	35-910280	. TUBE,GENERATOR BLAST.	1	A13BCDEFG
	106242-12-00600	TUBING,BLAST TUBE	1	A12
- 5	106242-12-00400	TUBING,BLAST TUBE	1	A13BCDEFG
	AN748-34	CLAMP,TUBING.	2	A4BCDEFG
- 6	35-910234-10	BAFFLE,RH REAR CYLINDER	1	A4BCDEFG
- 7	35-910268	BAFFLE,LH REAR CYLINDER	1	A4BCDEFG
- 8	35-910234-6	BAFFLE,CENTER CYLINDER.	4	A4BCDEFG
- 9	35-910216	SUPPORT,BAFFLE.	2	A4BCDEFG
	AN3-36A	BOLT,SUPPORT ATTACHING.	2	A4BCDEFG
- 10	35-910266-6	BAFFLE ASSY,LH FRONT CYLINDER	1	A4BCDEFG
- 11	35-910267-6	BAFFLE ASSY,RH FRONT CYLINDER	1	A4BCDEFG
- 12	35-910215	SUPPORT,BAFFLE.	2	A4BCDEFG
	AN3-47A	BOLT,SUPPORT ATTACHING.	2	A4BCDEFG
- 13	35-939145-30	BRACKET,BLAST TUBE SUPPORT.	1	A13BCDEFG
	AN742-16C	CLAMP,TUBE SUPPORT.	1	A13BCDEFG
- 14	35-939145	SUPPORT,REAR BAFFLE	1	A4BCDEFG
- 15	35-910233	BAFFLE ASSY,FRONT	1	A3
	35-910274	BAFFLE ASSY,FRONT	1	A4BCDEFG
- 16	AN931-14520	GROMMET	2	A4BCDEFG

GENERAL
G103 FUNDAMENTALS OF REGULATIONS, PUBLICATIONS, AND RECORDS
SELECT AND USE REGULATIONS, PUBLICATIONS, AND RECORDS
G103-A

WORKBOOK SUPPLEMENT #1 - Interpret a Type Certificate Data Sheet

Complete the following statements related to Type Certificate Data Sheet 3A19.

A. The engine in a Cessna Model 150 F develops 100 hp at __________ rpm.

B. If a McCauley 1A100/mcm propeller is installed in a Cessna 150 J, the weight of the propeller is ____________________________ lbs.

C. One hundred four knots is the ______________________________________ airspeed for a Cessna 150 F.

D. The maximum flap extended speed for a Cessna Model 150 A is _____________________ knots.

E. The maximum baggage allowance for a Cessna Model 150 H is ___________ lbs.

F. The datum location for a Cessna Model A150 K is station ____________.

G. Additional required equipment (item 2) on this model Cessna 150 F is ____.

H. The maximum never exceed speed for a Cessna Model 150 B is _____ mph.

I. The model Cessna 150 was approved on ________________________, 1965.

J. Cessna 150 A models go from serial number ________________ through serial number ________________.

K. The leveling means on a Cessna 150 C is ______________________________ ____________________.

L. The A150L is certificated in the _________________________ category.

M. The maximum weight of a Cessna 150 M is __________ lbs.

WORKBOOK SUPPLEMENT #1

DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

3A19
Revision 29
CESSNA

150	150J
150A	150K
150B	A150K
150C	150L
150D	A150L
150E	150M
150F	A150M
150G	152
150H	A152

August 15, 1978

TYPE CERTIFICATE DATA SHEET NO. 3A19

This data sheet which is part of Type Certificate No. 3A19 prescribes conditions and limitations under which the product for which the type certificate was issued meets the airworthiness requirements of the Federal Aviation Regulations.

Type Certificate Holder
Cessna Aircraft Company
Pawnee Division
Wichita, Kansas 67201

I - Model 150, 2 PCLM (Utility Category), Approved July 10, 1958
Model 150A, 2 PCLM (Utility Category), Approved June 14, 1960
Model 150B, 2 PCLM (Utility Category), Approved June 20, 1961
Model 150C, 2 PCLM (Utility Category), Approved June 15, 1962

Engine	Continental O-200-A	
*Fuel	80/87 min. grade aviation gasoline	
*Engine Limits	For all operations, 2750 r.p.m. (100 hp.)	
Propeller and Propeller Limits	1. Sensenich M69CK Diameter: not over 69 in., not under 67.5 in. Static r.p.m. at maximum permissible throttle setting: not over 2470, not under 2320 No additional tolerance permitted	24 lb. (-32)
	2. McCauley 1A100/MCM Diameter: not over 69 in., not under 67.5 in. Static r.p.m. at maximum permissible throttle setting: not over 2475, not under 2375 No additional tolerance permitted	21 lb. (-32)
*Airspeed Limits (CAS)	Never exceed	157 m.p.h. (136 knots)
	Maximum structural cruising	120 m.p.h. (104 knots)
	Maneuvering	106 m.p.h. (92 knots)
	Flaps extended	85 m.p.h. (74 knots)
C.G. Range	(+33.4) to (+36.0) at 1500 lb. (+32.2) to (+36.0) at 1250 lb. or less Straight line variation between points given	
Empty Wt. C.G. Range	None	
Leveling Means	Top edge of fuselage splice plate	
*Maximum Weight	1500 lb.	
No. of Seats	2 at (+39); (for child's optional jump seat refer to Equipment List)	
Maximum Baggage	80 lb. at (+65)	

Fuel Capacity	26 gal. (22.5 gal. usable, two 13 gal. tanks in wings at +42) See NOTE 1 for data on system fuel		
Oil Capacity	6 qt. (-13.5; unusable 2 qt.) See NOTE 1 for data on system oil		
Control Surface Movements	Wing flaps	Retracted	0°
		1st Notch	10°
		2nd Notch	20°
		3rd Notch	30°
		4th Notch	40°
	Ailerons	Up 20°	Down 15°
	Elevator	Up 25°	Down 15°
	Elevator tab	Up 10°	Down 20°
	Rudder	Right 16°	Left 16°
Serial Nos. Eligible	Model 150: 617, 17001 through 17999, 59001 through 59018 Model 150A: 628, 15059019 through 15059350 Model 150B: 15059351 through 15059700 Model 150C: 15059701 through 15060087		

II - Model 150D, 2 PCLM (Utility Category), Approved July 19, 1963
Model 150E, 2 PCLM (Utility Category), Approved June 18, 1964
Model 150F, 2 PCLM (Utility Category), Approved May 27, 1965

Engine	Continental O-200-A	
*Fuel	80/87 min. grade aviation gasoline	
*Engine Limits	For all operations, 2750 r.p.m. (100 hp.)	
Propeller and Propeller Limits	1. Sensenich M69CK Diameter: not over 69 in., not under 67.5 in. Static r.p.m. at maximum permissible throttle setting: not over 2470, not under 2320 No additional tolerance permitted	24 lb. (-32)
	2. McCauley 1A100/MCM Diameter: not over 69 in., not under 67.5 in. Static r.p.m. at maximum permissible throttle setting: not over 2475, not under 2375 No additional tolerance permitted	21 lb. (-32)
*Airspeed Limits (CAS)	Never exceed	162 m.p.h. (141 knots)
	Maximum structural cruising	120 m.p.h. (104 knots)
	Maneuvering	109 m.p.h. (95 knots)
	Flaps extended	100 m.p.h. (87 knots)
C.G. Range	(+32.9) to (+37.5) at 1600 lb. (+31.5) to (+37.5) at 1280 lb. or less Straight line variation between points given	
Empty Wt. C.G. Range	None	
Leveling Means	Top of tailcone	
*Maximum Weight	1600 lb.	
No. of Seats	2 at (+39) (for child's optional jump seat refer to Equipment List)	
Maximum Baggage	120 lb. at (+65) (150D, 150E) 120 lb. - Reference weight and balance data (150F)	
Fuel Capacity	26 gal. (22.5 gal. usable, two 13 gal. tanks in wings at +42) See NOTE 1 for data on system fuel	

Oil capacity	6 qt. (-13.5; unusable 2 qt.) See Note 1 for data on system oil

Control surface movements

Wing flaps (150D, 150E)	Retracted	0°	
	1st Notch	10°	
	2nd Notch	20°	
	3rd Notch	30°	
	4th Notch	40°	
Wing flaps (150F)		Down	0°-40° ±2°
Ailerons	Up 20°	Down 15°	
Elevator	Up 25°	Down 15°	
Elevator tab	Up 10°	Down 20°	
Rudder (150D, 150E)	Right 16°	Left 16°	
Rudder (150F)	Right 23°	Left 23°	
	(measured parallel to chord)		

Serial Nos. eligible

Model 150D: 15060088 through 15060772
Model 150E: 15060773 through 15061532 — 60970, 61482
Model 150F: 15061533 through 15064532

III - Model 150G, 2 PCLM (Utility Category), Approved May 5, 1966
2 PCSM (Utility Category), Approved August 12, 1966
Model 150H, 2 PCL-SM (Utility Category), Approved August 10, 1967
Model 150J, 2 PCL-SM (Utility Category), Approved May 2, 1968
Model 150K, 2 PCL-SM (Utility Category), Approved June 5, 1969

Engine	Continental O-200-A
*Fuel	80/87 min. grade aviation gasoline
*Engine limits	For all operations, 2750 rpm. (100 hp.)

Propeller and propeller limits

1. Sensenich M69CK — 24 lb. (-32)
   Diameter: not over 69 in., not under 67.5 in.
   Static rpm. at maximum permissible throttle setting:
   not over 2470, not under 2320
   No additional tolerance permitted
2. McCauley 1A100/MCM — 21 lb. (-32)
   Diameter: not over 69 in., not under 67.5 in.
   Static rpm. at maximum permissible throttle setting:
   not over 2475, not under 2375
   No additional tolerance permitted
3. McCauley 1A90/CF (seaplane only) — 24 lb. (-32)
   Diameter: not over 75 in., not under 73.5 in.
   Static rpm. at maximum permissible throttle setting:
   not over 2600, not under 2500
   No additional tolerance permitted
4. McCauley 1A101/DCM — 21 lb. (-32)
   Diameter: not over 69 in., not under 67 in.
   Static rpm. at maximum permissible throttle setting:
   not over 2600, not under 2500
   No additional tolerance permitted

*Airspeed limits (CAS)

Never exceed	162 mph.	(141 knots)
Maximum structural cruising	120 mph.	(104 knots)
Maneuvering	109 mph.	(95 knots)
Flaps extended	100 mph.	(87 knots)

C.G. range

Landplane
(+32.9) to (+37.5) at 1600 lb.
(+31.5) to (+37.5) at 1280 lb. or less
Seaplane
(+33.8) to (+36.5) at 1650 lb.
(+33.0) to (+36.5) at 1400 lb. or less
Straight line variation between points given

Empty wt. C.G. range	None
Leveling means	Top of tailcone
*Maximum weight	Landplane - 1600 lb. Seaplane - 1650 lb. (Edo 88A-1650 floats)
No. of seats	2 at (+39); (for child's optional jump seat, refer to Equipment List)
Maximum baggage	120 lb. - Reference weight and balance data
Fuel capacity	Landplane 26 gal. (22.5 gal. usable, two 13 gal. tanks in wings at +42.0) Seaplane 26 gal. (21.5 gal. usable, two 13 gal. tanks in wings at +42.0) See Note 1 for data on system fuel
Oil capacity	6 qt. (-13.5; unusable 2 qt.) See Note 1 for data on system oil
Control surface movements	Wing flaps Down 0°-40° ±2° Ailerons Up 20° +2°, -0° Down 14° +2°, -0° Elevator Up 25° ±1° Down 15° ±1° Elevator tab Up 10° ±1° Down 20° ±1° Rudder Right 23° +0°, -2° Left 23° +0°, -2° (measured perpendicularly to hinge line)
Serial Nos. eligible	Model 150G: 15064533 through 15067198 (except 15064970) Model 150H: 649, 15067199 through 15069308 Model 150J: 15069309 through 15071128 Model 150K: 15071129 through 15072003

IV - Model A150K, 2 PCLM (Acrobatic Category), Approved June 5, 1969

Engine	Continental O-200-A
*Fuel	80/87 min. grade aviation gasoline
*Engine limits	For all operations, 2750 rpm. (100 hp.)
Propeller and propeller limits	1. McCauley 1A101/DCM 21 lb. (-32) Diameter: not over 69 in., not under 67 in. Static rpm. at maximum permissible throttle setting: not over 2600, not under 2500 No additional tolerance permitted
*Airspeed limits (CAS)	Never exceed 193 mph. (168 knots) Maximum structural cruising 140 mph. (122 knots) Maneuvering 118 mph. (103 knots) Flaps extended 100 mph. (87 knots)
C.G. range	(+32.9) to (+37.5) at 1600 lb. (+31.5) to (+37.5) at 1280 lb. or less
Empty wt. C.G. range	None
Leveling means	Top of tailcone
*Maximum weight	1600 lb.
No. of seats	2 at (+39); (for child's optional jump seat refer to Equipment List)
Maximum baggage	120 lb. (reference weight and balance data)

Fuel capacity	26 gal. (22.5 gal. usable, two 13 gal. tanks in wings at +42.0)
Oil capacity	6 qt. (-13.5, unusable 2 qt.) See Note 1 for data on system oil
Control surface movements	Wing flaps Down 0°-40° ±2° Ailerons Up 20° +2°, -0° Down 14° +2°, -0° Elevator Up 25° ±1° Down 15° ±1° Elevator tab Up 10° ±1° Down 20° ±1° Rudder Right 23° +0°, -2° Left 23° +0°, -2° (measured perpendicularly to hinge line)
Serial Nos. eligible	Model A150K: A1500001 through A1500226

V - Model 150L, 2 PCLM (Utility Category), Approved June 8, 1970

Engine	Continental O-200-A
*Fuel	80/87 min. grade aviation gasoline
*Engine limits	For all operations 2750 rpm. (100 hp.)
Propeller and propeller limits	1. McCauley 1A101/GCM 27.7 lb. (-34.5) (1971, 1972, 1973 models) Diameter: not over 69 in., not under 67 in. Static rpm. at maximum permissible throttle setting: not over 2600, not under 2500 No additional tolerance permitted 2. McCauley 1A101/HCM 27.7 lb. (-34.5) (1973, 1974 models) Diameter: not over 69 in., not under 67 in. Static rpm. at maximum permissible throttle setting: not over 2600, not under 2500 No additional tolerance permitted 3. McCauley 1A101/PCM 27.0 lb. (-34.5) (1974 model) Diameter: not over 69 in., not under 67 in. Static rpm. at maximum permissible throttle setting: not over 2600, not under 2500 No additional tolerance permitted
*Airspeed limits (CAS)	Never exceed 162 mph. (141 knots) Maximum structural cruising 120 mph. (104 knots) Maneuvering 109 mph. (95 knots) Flaps extended 100 mph. (87 knots)
C.G. range	(+32.9) to (+37.5) at 1600 lb. (+31.5) to (+37.5) at 1280 lb. or less Straight line variation between points given
Empty wt. C.G. range	None
Leveling means	Jig located nut plates and screws at Stations +94.63 and +132.94 on left side of tailcone
*Maximum weight	1600 lb.
No. of seats	2 at (+39); (for child's optional jump seat refer to Equipment List)
Maximum baggage	120 lb. (Reference weight and balance data)
Fuel capacity	26 gal. (22.5 gal. usable, two 13 gal. tanks in wings at +42.0) See Note 1 for data on unusable fuel
Oil capacity	6 qt. (-13.5; unusable 2 qt.) See Note 1 for data on undrainable oil

Control surface movements	Wing flaps		Down 0°-40° ±2°
	Ailerons	Up 20° +2°, -0°	Down 14° +2°, -0°
	Elevator	Up 25° ±1°	Down 15° ±1°
	Elevator tab	Up 10° ±1°	Down 20° ±1°
	Rudder	Right 23° +0°, -2°	Left 23° +0°, -2°
	(measured perpendicularly to hinge line)		
Serial Nos. eligible	**15072004 through 15072628 (1971 model)** **15072629 through 15073658 (1972 model)** **15073659 through 15074850 (1973 model)** **15074851 through 15075781 (1974 model)**		

VI - Model A150L, 2 PCLM (Aerobatic Category), Approved June 8, 1970

Engine	Continental 0-200-A
*Fuel	80/87 min. grade aviation gasoline
*Engine limits	For all operations, 2750 rpm. (100 hp.)
Propeller and propeller limits	1. McCauley 1A101/GCM 27.7 lb. (-34.5) (1971, 1972, 1973 models) Diameter: not over 69 in., not under 67 in. Static rpm. at maximum permissible throttle setting: not over 2600, not under 2500 No additional tolerance permitted 2. McCauley 1A101/HCM 27.7 lb. (-34.5) (1971, 1972, 1973 models) Diameter: not over 69 in., not under 67 in. Static rpm. at maximum permissible throttle setting: not over 2600, not under 2500 No additional tolerance permitted 3. McCauley 1A102/OCM 27.0 lb. (-34.5) Diameter: not over 69 in., not under 67.5 in. (1974 model) Static rpm. at maximum permissible throttle setting: not over 2560, not under 2460 No additional tolerance permitted
*Airspeed limits (CAS)	Never exceed 193 mph. (168 knots) Maximum structural cruising 140 mph. (122 knots) Maneuvering 118 mph. (103 knots) Flaps extended 100 mph. (87 knots)
C.G. range	(+32.9) to (+37.5) at 1600 lb. (+31.5) to (+37.5) at 1280 lb. or less
Empty wt. C.G. range	None
Leveling means	Jig located nut plates and screws at Stations +94.63 and +132.94 on left side of tailcone
*Maximum weight	1600 lb.
No. of seats	2 at (+39); (for child's optional jump seat refer to Equipment List)
Maximum baggage	120 lb. (Reference weight and balance data)
Fuel capacity	26 gal. (22.5 gal. usable, two 13 gal. tanks in wings at +42.0) See Note 1 for data on unusable fuel
Oil capacity	6 qt. (-13.5, unusable 2 qt.) See Note 1 for data on undrainable oil

Control surface movements				
Wing flaps			Down	0°-40° ±2°
Ailerons	Up	20° +2°, -0°	Down	14° +2°, -0°
Elevator	Up	25° ±1°	Down	15° ±1°
Elevator tab	Up	10° ±1°	Down	20° ±1°
Rudder	Right	23° +0°, -2°	Left	23° +0°, -2°

(measured perpendicularly to hinge line)

Serial Nos. eligible		
	A1500227 through A1500276	(1971 Model)
	A1500277 through A1500342	(1972 Model)
	A1500343 through A1500429	(1973 Model)
	A1500430 through A1500523	(1974 Model) (Except A1500433)

VII - Model 150M, 2 PCLM (Utility Category), Approved May 6, 1974

Engine	Continental 0-200-A
*Fuel	80/87 min. grade aviation gasoline
*Engine limits	For all operations 2750 rpm. (100 hp.)
Propeller and propeller limits	1. McCauley 1A102/OCM 27.7 lb. (-34.5) Diameter: not over 69 in., not under 67.5 in. Static rpm. at maximum permissible throttle setting: not over 2560, not under 2460 No additional tolerance permitted

*Airspeed limits (CAS)	15075782 through 15077005		
	Never exceed	162 mph.	(141 knots)
	Maximum structural cruising	120 mph.	(104 knots)
	Maneuvering	109 mph.	(95 knots)
	Flaps extended	100 mph.	(87 knots)
*Airspeed limits (IAS) (See Note 4 on use of IAS)	15077006 through 15079405		
	Never exceed	141 knots	
	Maximum structural cruising	107 knots	
	Maneuvering	97 knots	
	Flaps extended	85 knots	

C.G. range	(+32.9) to (+37.5) at 1600 lb. (+31.5) to (+37.5) at 1280 lb. or less Straight line variation between points given
Empty wt. C.G. range	None
Leveling means	Jig located nut plates and screws at Stations +94.63 and +132.94 on left side of tailcone
*Maximum weight	1600 lb.
No. of seats	2 at (+39); (for child's optional jump seat, refer to Equipment List)
Maximum baggage	120 lb. (Reference weight and balance data)
Fuel capacity	26 gal. (22.5 gal. usable, two 13 gal. tanks in wings at +42.0) See Note 1 for data on unusable fuel
Oil capacity	6 qt. (-13.5; unusable 2 qt.) See Note 1 for data on undrainable oil

Control surface movements				
Wing flaps			Down	0°-40° ±2°
Ailerons	Up	20° +2°, -0°	Down	14° +2°, -0°
Elevator	Up	23° +1°, -0°	Down	15° ±1°
Elevator tab	Up	10° ±1°	Down	20° ±1°
Rudder	Right	23° +0°, -2°	Left	23° +0°, -2°

(measured perpendicularly to hinge line)

Serial Nos. eligible		
	15075782 through 15077005	(1975 Model)
	15077006 through 15078505	(1976 Model)
	15078506 through 15079405	(1977 Model)

VIII - Model A150M, 2 PCLM (Acrobatic Category), Approved May 6, 1974

Engine	Continental 0-200-A
*Fuel	80/87 min. grade aviation gasoline
*Engine limits	For all operations, 2750 rpm. (100 hp.)
Propeller and propeller limits	1. McCauley 1A102/OCM 27.0 lb. (-34.5) Diameter: not over 69 in., not under 67.5 in. Static rpm. at maximum permissible throttle setting: not over 2560, not under 2460 No additional tolerance permitted
*Airspeed limits (CAS)	15064970, A1500524 through A1500609 Never exceed 193 mph. (168 knots) Maximum structural cruising 140 mph. (122 knots) Maneuvering 118 mph. (103 knots) Flaps extended 100 mph. (87 knots)
*Airspeed limits (IAS) (See Note 4 on use of IAS)	A1500610 through A1500734 Never exceed 164 knots Maximum structural cruising 123 knots Maneuvering 105 knots Flaps extended 85 knots
C.G. range	(+32.9) to (+37.5) at 1600 lb. (+31.5) to (+37.5) at 1280 lb. or less
Empty wt. C.G. range	None
Leveling means	Jig located nut plates and screws at Stations +94.63 and +132.94 on left side of tailcone
*Maximum weight	1600 lb.
No. of seats	2 at (+39); (for child's optional jump seat, refer to Equipment List)
Maximum baggage	120 lb. (Reference weight and balance data)
Fuel capacity	26 gal. (22.5 gal. usable, two 13 gal. tanks in wings at +42.0) See Note 1 for data on unusable fuel
Oil capacity	6 qt. (-13.5, unusable 2 qt.) See Note 1 for data on undrainable oil
Control surface movements	Wing flaps Down 0°-40° ±2° Ailerons Up 20° +2°, -0° Down 14° +2°, -0° Elevator Up 23° +1°, -0° Down 15° ±1° Elevator tab Up 10° ±1° Down 20° ±1° Rudder Right 23° +0°, -2° Left 23° +0°, -2° (measured perpendicularly to hinge line)
Serial Nos. eligible	15064970, A1500524 through A1500609 (1975 Model) A1500610 through A1500684 (1976 Model) A1500685 through A1500734 (1977 Model)

IX - Model 152, 2 PCLM (Utility Category), Approved March 16, 1977

Engine	Lycoming 0-235-L2C
*Fuel	100LL/100 min. grade aviation gasoline
*Engine limits	For all operations 2550 rpm. (110 hp.)

Propeller and Propeller Limits	1. (a) McCauley 1A103/TCM6958 23.2 lb. (-36.5) Diameter: not over 69 in., not under 67.5 in. Static r.p.m. at maximum permissible throttle setting: not over 2380, not under 2280 No additional tolerance permitted (b) Spinner: Dwg. 0450073
*Airspeed Limits (IAS) (See NOTE 4 on Use of IAS)	Never exceed 149 knots Maximum structural cruising 111 knots Maneuvering 104 knots Flaps extended 85 knots
C.G. Range	(+32.65) to (+36.5) at 1670 lb. (+31.0) to (+36.5) at 1350 lb. or less Straight line variation between points given
Empty Wt. C.G. Range	None
Leveling Means	Jig located nut plates and screws at Stations +94.63 and +132.94 on left side of tailcone
*Maximum Weight	1670 lb.
No. of Seats	2 at (+39); (for child's optional jump seat, refer to Equipment List)
Maximum Baggage	120 lb. (Reference weight and balance data)
Fuel Capacity	26 gal. (24.5 gal. usable, two 13 gal. tanks in wings at +42.0) See NOTE 1 for data on unusable fuel
Oil Capacity	6 qt. (-14.7; unusable 2 qt.) See NOTE 1 for data on undrainable oil
Control Surface Movements	Wing flaps Down 0°-30° ±2° Ailerons Up 20° ±1° Down 15° ±1° (aileron travel measured from 1° ±.5° droop) Elevator Up 25° ±1° Down 18° ±1° Elevator tab Up 10° ±1° Down 20° ±1° Rudder Right 23° +0°, -2° Left 23° +0°, -2° (measured perpendicularly to hinge line)
Serial Nos. Eligible	15279406 through 15282031 (1978 Model) 15282032 and on (1979 Model and on)

II - Model A152, 2 PCLM (Acrobatic Category), Approved March 16, 1977

Engine	Lycoming O-235-L2C
*Fuel	100LL/100 min. grade aviation gasoline
*Engine Limits	For all operations, 2550 r.p.m. (110 hp.)
Propeller and Propeller Limits	1. (a) McCauley 1A103/TCM6958 23.2 lb. (-36.5) Diameter: not over 69 in., not under 67.5 in. Static r.p.m. at maximum permissible throttle setting: not over 2380, not under 2280 No additional tolerance permitted (b) Spinner: Dwg. 0450073
*Airspeed Limits (IAS) (See NOTE 4 on Use of IAS)	Never exceed 172 knots Maximum structural cruising 125 knots Maneuvering 108 knots Flaps extended 85 knots

C.G. Range	(+32.65) to (+36.5) at 1670 lb. (+31.0) to (+36.5) at 1350 lb. or less
Empty Wt. C.G. Range	None
Leveling Means	Jig located nut plates and screws at Stations +94.63 and +132.94 on left side of tailcone
*Maximum Weight	1670 lb.
No. of Seats	2 at (+39); (for child's optional jump seat, refer to Equipment List)
Maximum Baggage	120 lb. (Reference weight and balance data)
Fuel Capacity	26 gal. (24.5 gal. usable, two 13 gal. tanks in wings at +42.0) See NOTE 1 for data on unusable fuel
Oil Capacity	6 qt. (-14.7; unusable 2 qt.) See NOTE 1 for data on undrainable oil

Control Surface Movements

Wing flaps		Down 0°-30° ±2°
Ailerons	Up 20° ±1°	Down 15° ±1°
(aileron travel measured from 1° ±.5° droop)		
Elevator	Up 25° ±1°	Down 18° ±1°
Elevator tab	Up 10° ±1°	Down 20° ±1°
Rudder	Right 23° +0°, -2°	Left 23° +0°, -2°
(measured perpendicularly to hinge line)		

Serial Nos. Eligible	A1500433, A1520735 through A1520808	(1978 Model)
	A1520809 and on	(1979 Model and on)

Data Pertinent to All Models

Datum	Fuselage station 0.0 front face of firewall
Certification Basis	Part 3 of the Civil Air Regulations dated May 15, 1956, as amended by 3-4. In addition, effective S/N 15282032 and on for 152 and S/N A1520809 and on for A152, FAR 23.1559 effective March 1, 1978. FAR 36 dated December 1, 1969, plus Amendments 36-1 through 36-5 for 152 and A152 only.

Application for Type Certificate dated August 13, 1956.

Type Certificate No. 3A19 issued July 10, 1958, obtained by the manufacturer under delegation option procedures.

Equivalent Safety Items	S/N 15077006 through 15079405 S/N 15279406 and on S/N A1500610 through A1500734 S/N A1520735 and on
Airspeed Indicator	CAR 3.757 (See NOTE 4)
Operating Limitations	CAR 3.778(a)

Production Basis: Production Certificate No. 4. Delegation Option Manufacturer No. CE-1 authorized to issue airworthiness certificates under delegation option provisions of Part 21 of the Federal Aviation Regulations.

Equipment: The basic required equipment as prescribed in the applicable airworthiness regulations (see Certification Basis) must be installed in the aircraft for certification. This equipment must include a current Airplane Flight Manual. In addition, the following item of equipment is required:

1. Stall warning indicator, audible, Cessna Dwg. 0511062 (Model 150 through 150E)
2. Stall warning indicator, audible, Cessna Dwg. 0413029 (Model 150F through 150M, 1977 Model) (A150K through A150M, 1977 Model) (152 and on, A152 and on)

Note 1. Current weight and balance report together with list of equipment included in certificated empty weight and loading instructions when necessary must be provided for each aircraft at time of original certification.

Serial Nos. 17001 through 17999, 59001 through 59018, 15059019 through 15077005 and A1500001 through A1500609
The certificated empty weight and corresponding center of gravity location must include unusable fuel of 21 lb. at (+40) for landplanes or 27 lb. at (+40) for seaplanes and an undrainable oil of (0) lb. at (-13.5) for both landplane and seaplane.

Serial Nos. 15077006 through 15079405 and A1500610 through A1500734
The certificated empty weight and corresponding center of gravity location must include unusable fuel of 21 lb. at (+40) and full oil of 11.3 lb. at (-13.5) for landplane.

Serial Nos. 15279406 and on, and A1520735 and on
The certificated empty weight and corresponding center of gravity location must include unusable fuel of 9 lb. at (+40) and full oil of 11.3 lb. at (-14.7) for landplane.

Note 2. The following information must be displayed in the form of composite or individual placards.

A. In full view of the pilot:

(1) "This airplane must be operated in compliance with the operating limitations stated in the form of placards, markings and manuals."

(2) (a) Model 150, 150A, 150B and 150C
"Acrobatic maneuvers are limited to the following:

Maneuver	Entry Speed
Chandelle	106 mph. (92 knots)
Steep turns	106 mph. (92 knots)
Lazy eights	106 mph (92 knots)
Stalls (except whip)	Use slow deceleration
Spins	Use slow deceleration

Spin recovery - opposite rudder-neutral elevator
Intentional spins with flaps extended prohibited
Design maneuvering speed 106 mph. (92 knots)"

(b) Model 150D, 150E, 150F, 150G, 150H, 150J, 150K
"Acrobatic maneuvers are limited to the following:

Maneuver	Entry Speed
Chandelle	109 mph. (95 knots)
Steep turns	109 mph. (95 knots)
Lazy eights	109 mph. (95 knots)
Stalls (except whip)	Use slow deceleration
Spins	Use slow deceleration

Intentional spins with flaps extended prohibited.
Spin recovery - opposite rudder-forward elevator
Maximum design weight - Landplane 1600 lb.
Seaplane 1650 lb.
Maximum maneuvering speed 109 mph. (95 knots)
Maximum flight maneuvering load factors

Flaps Up	+4.4	-1.76
Flaps Down	+3.5"	

Note 2. A. (Cont.)

(3) Model A150K

"This airplane must be operated as an Acrobatic Category airplane in compliance with the operating limitations stated in the form of placards, markings and manuals.

Acrobatic Category
Maximum design weight 1600 lb.
Maximum maneuvering speed 118 mph. (103 knots)
Refer to weight and balance data for loading instructions
Flight maneuvering load factors: Flaps up +6.0 -3.0 Flaps down: +3.5
Aerobatic maneuvers with flaps extended are prohibited.
Inverted flight is prohibited.
Child's seat and/or baggage compartment must not be occupied during aerobatic maneuvering. Spin recovery: Apply opposite rudder, followed by forward elevator for normal recovery.

The following aerobatic maneuvers are approved:

Maneuver	Entry Speed	Maneuver	Entry Speed
Chandelle	120 mph. (104 knots)	Lazy eights	120 mph. (104 knots)
Steep turns	100 mph. (96 knots)	Spins	Slow deceleration
Barrel rolls	130 mph. (113 knots)	Aileron rolls	130 mph. (113 knots)
Snap rolls	90 mph. (78 knots)	Immelmanns	145 mph. (126 knots)
Loops	130 mph. (113 knots)	Cuban eights	145 mph. (126 knots)
Vertical reversements	90 mph. (78 knots)	Stalls (except whip stalls)	Slow deceleration"

(4) Model 150L and 150M (1971 Model through 1975 Model)

"This airplane is approved in the utility category and must be operated in compliance with the operating limitations as stated in the form of placards, markings, and manuals.

	Maximums	
Maneuvering speed		109 mph. CAS (95 knots)
Gross weight		1600 lb.
Flight load factor	Flaps Up	+4.4, -1.76
	Flaps Down	+3.5

Maneuver	Max. Entry Speed	Maneuver	Max. Entry Speed
Chandelles	109 mph. (95 knots)	Spins	Slow deceleration
Lazy eights	109 mph. (95 knots)	Stalls (except whip stalls)	Slow deceleration
Steep turns	109 mph. (95 knots)		

Spin Recovery: opposite rudder - forward elevator - neutralize controls. Intentional spins with flaps extended are prohibited. Known icing conditions to be avoided. This airplane is certified for the following flight operations as of date of original airworthiness certificate:

(DAY - NIGHT - VFR - IFR)" (AS APPLICABLE)

Note 2. A. (Cont.)

(5) Model A150L and A150M (1971 Model through 1975 Model)

"This airplane is approved in the acrobatic category and must be operated in compliance with the operating limitations as stated in the form of placards, markings, and manuals.

	Maximums	
Maneuvering speed		118 mph. CAS (103 knots)
Gross weight		1600 lb.
Flight load factor	Flaps Up	+6.0, -3.0
	Flaps Down	+3.5

Aerobatic maneuvers with flaps extended are prohibited.
Inverted flight is prohibited
Child's seat and/or baggage compartment must not be occupied during aerobatics.

Maneuver	Max. Entry Speed	Maneuver	Max. Entry Speed
Chandelles	120 mph. (104 knots)	Lazy eights	120 mph. (104 knots)
Steep turns	110 mph. (96 knots)	Spins	Slow deceleration
Barrel rolls	130 mph. (113 knots)	Aileron rolls	130 mph. (113 knots)
Snap rolls	90 mph. (78 knots)	Immelmanns	145 mph. (126 knots)
Loops	130 mph. (113 knots)	Cuban eights	145 mph. (126 knots)
Vertical reversements	90 mph. (78 knots)	Stalls (Except whip stalls)	Slow deceleration

Spin Recovery: opposite rudder - forward elevator - neutralize controls.
Known icing conditions to be avoided. This airplane is certified for the following flight operations as of date of original airworthiness certificate:
(DAY - NIGHT - VFR - IFR)" (As Applicable)

(6) Model 150M (1976 and 1977 Model)

"This airplane is approved in the utility category and must be operated in compliance with the operating limitations as stated in the form of placards, markings, and manuals.

	Maximums	
Maneuvering Speed (IAS)		97 knots
Gross Weight		1600 lbs.
Flight load factor -	Flaps Up	+4.4, -1.76
	Flaps Down	+3.5

NO ACROBATIC MANEUVERS APPROVED EXCEPT THOSE LISTED BELOW

Maneuver	Recm. Entry Speed	Maneuver	Recm. Entry Speed
Chandelles	95 knots	Spins	Slow deceleration
Lazy eights	95 knots	Stalls (except whip stalls)	Slow deceleration
Steep turns	95 knots		

Abrupt use of controls prohibited above 97 knots.
Spin Recovery: opposite rudder - forward elevator - neutralize controls.
Intentional spins with flaps extended are prohibited. Flight into known icing conditions prohibited. This airplane is certified for the following flight operations as of date of original airworthiness certificate:
(DAY - NIGHT - VFR - IFR)" (As applicable)

NOTE 2. A. (Cont.)

(7) A150M (1976 and 1977 Model)

"This airplane is approved in the acrobatic category and must be operated in compliance with the operating limitations as stated in the form of placards, markings, and manuals.

		Maximums
Maneuvering Speed (IAS)		105 knots
Gross Weight		1600 lbs.
Flight load factor -	Flaps Up	+6.0, -3.0
	Flaps Down	+3.5

Aerobatic maneuvers with flaps extended are prohibited. Inverted flight is prohibited. Baggage compartment and/or child's seat must not be occupied during aerobatics.

THE FOLLOWING AEROBATIC MANEUVERS ARE APPROVED

Maneuver	Recm. Entry Speed	Maneuver	Recm. Entry Speed
Chandelles	105 knots	Lazy eights	105 knots
Steep turns	100 knots	Spins	Slow deceleration
Barrel rolls	115 knots	Aileron rolls	115 knots
Snap rolls	80 knots	Immelmanns	130 knots
Loops	115 knots	Cuban eights	130 knots
Vertical reversements	80 knots	Stalls (Except whip stalls)	Slow deceleration

Abrupt use of controls prohibited above 105 knots.
Spin Recovery: opposite rudder - forward elevator - neutralize controls.
Flight into known icing conditions prohibited. This airplane is certified for the following flight operations as of date of original airworthiness certificate:

(DAY - NIGHT - VFR - IFR)" (As applicable)

(8) Model 152 (1978 Model)

"This airplane is approved in the utility category and must be operated in compliance with the operating limitations as stated in the form of placards, markings and manuals.

		Maximums
Maneuvering Speed (IAS)		104 knots
Gross Weight		1670 lbs.
Flight Load Factor	Flaps Up	+4.4, -1.75
	Flaps Down	+3.5

NO ACROBATIC MANEUVERS APPROVED EXCEPT THOSE LISTED BELOW

Maneuver	Recm. Entry Speed	Maneuver	Recm. Entry Speed
Chandelles	95 knots	Spins	Slow deceleration
Lazy eights	95 knots	Stalls (except whip stalls)	Slow deceleration
Steep turns	95 knots		

Abrupt use of controls prohibited above 104 knots.
Intentional spins with flaps extended are prohibited. Altitude loss in a stall recovery -- 160 ft. Flight into known icing conditions prohibited. This airplane is certified for the following flight operations as of date of original airworthiness certificate:

(DAY - NIGHT - VFR - IFR)" (As applicable)

NOTE 2. A. (Cont.)

(9) Model A152 (1978 Model and A1500433)
"This airplane is approved in the acrobatic category and must be operated in compliance with the operating limitations as stated in the form of placards, markings and manuals.

		Maximums
Maneuvering Speed (IAS)		108 knots
Gross Weight		1670 lbs.
Flight Load Factor	Flaps Up	+6.0, -3.0
	Flaps Down	+3.5

Aerobatic maneuvers with flaps extended are prohibited. Inverted flight is prohibited. Baggage compartment and/or child's seat must not be occupied during aerobatics.

THE FOLLOWING AEROBATIC MANEUVERS ARE APPROVED

Maneuver	Recm. Entry Speed	Maneuver	Recm. Entry Speed
Chandelles	105 knots	Lazy eights	105 knots
Steep turns	100 knots	Spins	Slow deceleration
Barrel rolls	115 knots	Aileron rolls	115 knots
Snap rolls	80 knots	Immelmanns	130 knots
Loops	115 knots	Cuban eights	130 knots
Vertical reversements	80 knots	Stalls (except whip stalls)	Slow deceleration

Abrupt use of controls prohibited above 108 knots.
Altitude loss in a stall recovery -- 160 ft. Flight into known icing conditions prohibited. This airplane is certified for the following flight operations as of date of original airworthiness certificate:

(DAY - NIGHT - VFR - IFR)" (As applicable)

(10) Model 152 (1979 Model and on)
"The markings and placards installed in this airplane contain operating limitations which must be complied with when operating this airplane in the Utility Category. Other operating limitations which must be complied with when operating this airplane in this category are contained in the Pilot's Operating Handbook and FAA Approved Airplane Flight Manual.

No acrobatic maneuvers approved except those listed below:

Maneuver	Rec. Entry Speed	Maneuver	Rec. Entry Speed
Chandelle	95 KIAS	Spin	Slow Decel.
Lazy 8	95 KIAS	Stalls (except whip stalls)	Slow Decel.
Steep turn	95 KIAS		

Intentional spins prohibited with flaps extended.

Flight into known icing conditions prohibited.

This airplane is certified for the following flight operations as of date of original airworthiness certificate:

(DAY - NIGHT - VFR - IFR)" (As applicable)

(11) Model A152 (1979 Model and on)
"The markings and placards installed in this airplane contain operating limitations which must be complied with when operating this airplane in the Acrobatic Category. Other operating limitations which must be complied with when operating this airplane in this category are contained in the Pilot's Operating Handbook and FAA Approved Airplane Flight Manual.

NOTE 2. A. (11) (Cont.)
No acrobatic maneuvers approved except those listed below:

Maneuver	Rec. Entry Speed	Maneuver	Rec. Entry Speed
Chandelle	105 KIAS	Lazy 8's	105 KIAS
Steep turns	100 KIAS	Spins	Slow Decel.
Barrel rolls	115 KIAS	Aileron rolls	115 KIAS
Snap rolls	80 KIAS	Immelmanns	130 KIAS
Loops	115 KIAS	Cuban 8's	130 KIAS
Vertical reversements	80 KIAS	Stalls (except whip stalls)	Slow Decel.

Acrobatic maneuvers prohibited with flaps extended.

Inverted flight prohibited.

Baggage compartment and/or child's seat must not be occupied during acrobatics.

Abrupt use of controls prohibited above 108 KIAS.

Flight into known icing conditions prohibited.

This airplane is certified for the following flight operations as of date of original airworthiness certificate:

"DAY - NIGHT - VFR - IFR)" (As applicable)

B. On the flap handle
(1) Models 150, 150A, 150B, 150C
"Flaps - Pull to extend
Retracted 0°
Takeoff - 1st Notch 10°
2nd Notch 20°
3rd Notch 30°
Landing - 4th Notch 40°"
(2) Models 150D, 150E
"Flaps - Pull to extend
Takeoff - Retracted 0°
Landing - 0°-40°"

C. In the baggage compartment
(1) Models 150, 150A, 150B, 150C
"Baggage - 80 lb. maximum."
(2) Model 150D, 150E
"Baggage - 120 lb. maximum."
(3) Model 150F through 150M (1977 Model) and A150K through A150M (1977 Model) 152 and on, A152 and on
"120 lb. maximum baggage and/or auxiliary seat passenger. For additional loading instructions see Weight and Balance Data."

D. On the instrument panel
(1) Models 150K, A150K; 1971 Models 150L, A150L
"Do not turn off alternator in flight except in emergency."

E. Near fuel shut-off valve
(1) Models 150 through 150M (1977 Model) and A150K through A150M (1977 Model)
"Fuel 22.5 gals. ON-OFF."
(2) Model 152 and on and A152 and on
"Fuel 24.5 gals. ON-OFF."

F. On front door post;
(1) Model A150K through A150M (1977 Model), A152 and on
"Emergency door release
1. Unlatch door
2. Pull 'D' ring."

NOTE 2. (Cont.)

G. On door near window latch
  (1) Model A150K through A150M (1975 Model)
      "Do not open window above 165 m.p.h."
  (2) Model A150M (1976 and 1977 Model) (1978 Model A152)
      "Do not open window above 143 knots IAS."

H. On the instrument panel near overvoltage light (Model 150L through 150M, and A150L through A150M, 1978 Model 152 and A152, and A1500433)
  (1) "High Voltage"

I. On left hand instrument panel
  (1) Model 152 and on, and A152 and on
      "Spin Recovery
      1. Verify ailerons are neutral and throttle is closed.
      2. Apply full opposite rudder.
      3. Move control wheel briskly forward to break stall.
      4. Neutralize rudder and recover from dive."

J. On instrument panel near airspeed indicator 1979 Model 152 and on, and 1979 Model A152 and on:
  Model 152 - "Maneuver Speed 104 KIAS"
  Model A152 - "Maneuver Speed 108 KIAS"

NOTE 3. Reserved

NOTE 4. The marking of the airspeed indicator with IAS provides an equivalent level of safety to CAR 3.757 when the approved airspeed calibration data presented in Section V of the Pilot's Operating Handbooks listed below is available to the pilot:

150M, Cessna P/N D1055-13 (S/N 15077006 through 15078505)
A150M, Cessna P/N D1056-13 (S/N A1500610 through A1500684)
150M, Cessna P/N D1080-13 (S/N 15078506 through 15079405)
A150M, Cessna P/N D1081-13 (S/N A1500685 through A1500734)
152, Cessna P/N D1107-13 (S/N 15279406 through 15282031)
A152, Cessna P/N D1108-13 (S/N A1500433, A1520735 through A1520808)
152, Cessna P/N D1136-13 (S/N 15282032 and on)
A152, Cessna P/N D1137-13 (S/N A1520809 and on)

NOTE 5. Near fuel tank filler

A. 150 series through S/N 15079405 and A150 series through S/N A1500734 except A1500433:
  "FUEL
  80/87 min. grade aviation gasoline
  Cap. 13.0 U.S. Gal."

B. S/N 15279406 and on, S/N 1500433, A1520735 and on:
  "FUEL
  100LL/100 min. grade aviation gasoline
  Cap. 13.0 U.S. Gal."

NOTE 6. 14-volt electrical system
(150 series through S/N 15079405 and A150 series through S/N A1500734 except A1500433)

28-volt electrical system
(S/N 15279406 and on, S/N A1500433, S/N A1520735 and on)

In addition to the placards specified above the prescribed operating limitations indicated by an asterisk (*) under Sections I through X of this data sheet must also be displayed by permanent markings.

- END -

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GENERAL
G103 FUNDAMENTALS OF REGULATIONS, PUBLICATIONS, AND RECORDS
SELECT AND USE REGULATIONS, PUBLICATIONS, AND RECORDS
G103-A

ANSWERS TO WORKBOOK SUPPLEMENT #1

A. 2,750

B. 21 lbs

C. Maximum structural cruising

D. 74

E. 120

F. 0.0

G. Stall warning indicator, audible, Cessna Dwg 0413029

H. 157

I. May 27

J. 15059019 - 15059350

K. Top edge of fuselage splice plate

L. Aerobatic

M. 1,600

GENERAL
G103 FUNDAMENTALS OF REGULATIONS, PUBLICATIONS, AND RECORDS
SELECT AND USE REGULATIONS, PUBLICATIONS, AND RECORDS
G103-A

THEORY TEST

1. Match terms related to FAA regulations and publications to their correct definitions. Write the correct numbers in the blanks.

_____ a. Lighter-than-air aircraft that is not engine driven

_____ b. Framework, covered with paper, cloth, metal, or other material, intended to be flown at the end of a rope or cable, and having as its only support the force of the wind moving past its surfaces

_____ c. Heavier-than-air aircraft, that is supported in flight by the dynamic reaction of the air against its lifting surfaces and whose free flight does not depend principally on an engine

_____ d. Engine-driven fixed-wing aircraft heavier than air, that is supported in flight by the dynamic reaction of the air against its wings

_____ e. Aircraft that can rise and remain suspended by using contained gas weighing less than the air that is displaced by the gas

_____ f. Engine-driven lighter-than-air aircraft that can be steered

_____ g. Fuselage, booms, nacelles, cowlings, fairings, airfoil surfaces (including rotors but excluding propellers and rotating airfoils of engines), and landing gear of an aircraft and their accessories and controls

_____ h. Aircraft of 12,500 pounds or less, maximum certificated takeoff weight

1. Airship
2. Lighter-than-air aircraft
3. Kite
4. Balloon
5. Glider
6. Airplane
7. Small aircraft
8. Airframe

THEORY TEST

____i. Aircraft other than public aircraft

____j. Heavier-than-air aircraft that depends principally for its support in flight on the lift generated by one or more rotors

____k. Rotorcraft whose rotors are not engine-driven except for initial starting, but are made to rotate by action of the air when the rotorcraft is moving; and whose means of propulsion, consisting usually of conventional propellers, is independent of the rotor system

____l. Rotorcraft that, for its horizontal motion, depends principally on its engine-driven rotors

____m. Rotorcraft whose rotors are normally engine-driven for takeoff, hovering, and landing, and for forward flight through part of its speed range, and whose means of propulsion, consisting usually of conventional propellers, is independent of the rotor system

____n. Rotor that supplies the principal lift to a rotorcraft

____o. Rotor that serves either to counteract the effect of the main rotor torque on a rotorcraft or to manuever the rotorcraft about one or more of its three principal axes

____ p. Device for propelling an aircraft that has blades on an engine-driven shaft and that, when rotated, produces by its action on the air, a thrust approximately perpendicular to its plane of rotation. It includes control components normally supplied by its manufacturer, but does not include main and auxiliary rotors or rotating airfoils of engines

9. Civil aircraft
10. Gyrodyne
11. Gyroplane
12. Main rotor
13. Rotorcraft
14. Helicopter
15. Propeller
16. Auxiliary rotor

____q. Engine that is used or intended to be used for propelling aircraft. It includes turbosuperchargers, appurtenances, and accessories necessary for its functioning, but does not include propellers

____r. Device that is used or intended to be used for flight in the air

____s. Aircraft used only in the service of a government, or a political subdivision. It does not include any government-owned aircraft engaged in carrying persons or property for commercial purposes

____t. Aircraft of more than 12,500 pounds, maximum certificated takeoff weight

____u. Person who, for compensation or hire, hire, engages in the carriage by aircraft in air commerce of persons or property, other than as an air carrier or foreign air carrier or under the authority of Part 375 of this title. Where it is doubtful that an operation is for "compensation or hire", the test applied is whether the carriage by air is merely essential to the person's other business or is, in itserlf, a major enterprise for profit

____v. Person assigned to perform duty in an aircraft during flight time

____w. Individual, firm, partnership, corporation, company, association, joint-stock association, or government entity. It includes a trustee, receiver, assignee, or similar representative of any of them

____x. Person who undertakes directly by lease, or other arrangements, to engage in air transportation

17. Aircraft
18. Aircraft engine
19. Large aircraft
20. Public aircraft
21. Crewmember
22. Air carrier
23. Person
24. Commercial operator

THEORY TEST

_____y. Federal Aviation Administrator or any person to whom he has delegated his authority in the matter concerned

_____z. Pilot, flight engineer, or flight navigator assigned to duty in an

_____aa. (1) With respect to materials and parts used to confine fire in a designated fire zone, means the capacity to withstand at least as well as steel in dimensions appropriate for the purpose for which they are used, the heat produced when there is a severe fire of extended duration in that zone; and (2) with respect to other materials and parts, means the capacity to withstand the heat associated with fire at least as well as steel in dimensions appropriate for the purpose for which they are used

_____bb. Not susceptible to combustion to the point of propagating a flame, beyond safe limits, after the ignition source is removed

_____cc. With respect to a fluid or gas, means susceptible to igniting readily or to exploding

_____dd. Not susceptible to burning violently when ignited

_____ee. (1) With respect to sheet or structural members means the capacity to withstand the heat associated with fire at least as well as aluminum alloy in dimensions appropriate for the purpose for which they are used; and (2) with respect to fluid-carrying lines, fluid system parts, wiring, air ducts, fittings, and powerplant controls, means the capacity to perform the intended functions under the heat and other conditions likely to occur when there is a fire at the place concerned

25. Administrator
26. Flight crewmember
27. Fire resistant
28. Flammable
29. Flash resistant
30. Fireproof
31. Flame resistant

THEORY TEST

____ff. Propeller blade setting as determined by the blade angle measured in a manner, and at a radius, specified by the instruction manual for the propeller

____gg. Maximum speed at which the landing gear can be safely extended or retracted

____hh. Atmosphere defined in U.S. Standard Atmosphere, 1962 (Geopotential altitude tables)

____ii. Power delivered at the propeller shaft (main drive or main output) of an aircraft engine

____jj. With respect to reciprocating, turbopropeller, and turboshaft engine type certification, means the approved brake horsepower that is developed statically under standard sea level conditions, within the engine operating limitations established under Part 33, and limited in use to periods of not over 5 minutes for takeoff operation

____kk. With respect to reciprocating, turbopropeller, and turboshaft engines, means the approved brake horsepower that is developed statically or in flight, in standard atmosphere at a specified altitude, within the engine operating limitations established under Part 33, and approved for unrestricted periods of use

____ll. Absolute pressure as measured at the appropriate point in the induction system and usually expressed in inches of mercury

32. Landing gear operating speed
33. Brake horsepower
34. Rated maximum continuous power
35. Pitch setting
36. Manifold pressure
37. Rated take-off power
38. Standard atmosphere

____mm. Maximum speed at which an aircraft can be safely flown with the landing gear extended

____nn. Highest speed permissible with wing flaps in a prescribed extended position

____oo. Ratio of true airspeed to the speed of sound

____pp. Unless the context otherwise requires, means to show to the satisfaction of the Administrator

____qq. With respect to aircraft, means use, cause to use or authorize to use aircraft, for the purpose (except as provided in Part 91.10 of this chapter) of air navigation including the piloting of aircraft, with or without the right of legal control (as owner, lessee, or otherwise)

____rr. Device using an internal mechanism to show visually or aurally the attitude, altitude, or operation of an aircraft or aircraft part. It includes electronic devices for automatically controlling an aircraft in flight

____ss. Statement that, as a part of a certificate, sets forth special conditions, privileges, or limitations

____tt. With respect to maintenance time records, means the time from the moment an aircraft leaves the surface of the earth until it touches it at the next point of landing

39. Mach number

40. Instrument

41. Show

42. Landing gear extended speed

43. Rating

44. Flap extended speed

45. Time in service

46. Operate

THEORY TEST

____uu. Unless used with reference to another person, means approved by the Administrator

____vv. Time from the moment the aircraft first moves under its own power for the purpose of flight until the moment it comes to rest at the next point of landing. ("Block-to-block" time.)

____ww. Interstate, overseas, or foreign air commerce or the transportation of mail by aircraft or any operation or navigation of aircraft within the limits of any Federal airway or any operation or navigation of aircraft when directly affects, or which may endanger safety in, interstate, overseas, or foreign air commerce

____xx. An alteration not listed in the aircraft, aircraft engine, or propeller specification - (1) that, might appreciably affect weight, balance, structural strength, performance, powerplant operation, flight characteristics, or other qualities affecting airworthiness; or (2) that is not done according to accepted practices or cannot be done by elementary operations

____yy. A repair - (1) that, if improperly done, might appreciably affect weight, balance, structural strength, performance, powerplant operation, flight characteristics, or other qualities affecting airworthiness; or (2) that is not done according to accepted practices or cannot be done by elementary operations

47. Flight time
48. Major repair
49. Approved
50. Major alteration
51. Air commerce

THEORY TEST

____ zz. Inspection, overhaul, repair, preservation, and the replacement of parts, but excludes preventive maintenance

____ aaa. Simple or minor preservation operations and the replacement of small standard parts not involving complex assembly operations

____ bbb. An alteration other than a major alteration

____ ccc. Repair other than a major repair

____ ddd. Specifications for older aircraft, aircraft engines, and propellers of which there are not more than fifty in the FAA registry

____ eee. Official specifications of an aircraft, aircraft engine, or propeller

____ fff. Technical data for aircraft, aircraft engines, and propellers certificated under the Civil Air Regulations

____ ggg. Certificate authorizing an alteration to an airframe, aircraft engine, or component which has been granted an Approved Type Certificate (ATC)

____ hhh. Manual issued by manufacturer of an aircraft, aircraft engine, or component; describes approved methods of service and repair

____ iii. Rules, regulations, and guidelines established by the FAA for safety and operation of civil aircraft

52. Minor repair

53. Aircraft specifications

54. Aircraft listing

55. Minor alteration

56. Supplemental type certificate (STC)

57. Maintenance

58. Service or maintenance manual

59. Federal Aviation Regulations (FARs)

60. Preventive maintenance

61. Type certificate data sheet (TCDS)

THEORY TEST

____jjj. Certificate issued by the FAA to all aircraft which have met minimum standards required for certification

____kkk. Information issued by manufacturer of an aircraft, aircraft engine, or component that details maintenance procedures that will enhance the safety of, or improve the performance of, the product

____lll. Regulatory notice sent out by the FAA to registered owner of an aircraft informing him or her of a condition that must be corrected for the aircraft to maintain its airworthiness status

____mmm. Approval to manufacture for sale an aircraft, aircraft engine, or propeller

____nnn. Also called the Administrator; part of the Department of Transportation which establishes the rules and regulations as well as enforces those rulings that are applicable to the FARs

____ooo. Identifying letters required on an aircraft part or component to signify it as being manufactured under a Federal Aviation Administration Parts Manufacturing Approval

____ppp. Nonregulatory information issued by the FAA to enable maintenance technicians to understand and comply with federal aviation regulations

____qqq. Issued on a subscription basis as AC 43-16 to provide a communication channel for the interchange of service experience for the improvement of aeronautical product durability, reliability, and safety

62. Advisory circular
63. Airworthiness certificate
64. Airworthiness alert
65. Airworthiness directive (AD)
66. Service bulletin
67. Federal Aviation Administration (FAA)
68. FAA-PMA
69. Type certificate

THEORY TEST

2. Name the FAA operational level with which the A&P mechanic will most often communicate. ____

3. Match descriptions and titles of FARS related to maintenance to their correct numbers. Write the correct numbers in the blanks.

_____ a. General Operating and Flight Rules: It contains the general operating and flight rules. This regulation includes the requirements for maintenance, inspection, and recordkeeping. For details, it specifies other parts of the FARs

_____ b. Airworthiness Directives: Includes a description of the Airworthiness Directive system. When an aircraft is certificated, it must meet all certification requirements. But after it is in service and some deficiency shows up, an airworthiness directive (AD) is issued that describes the way to correct the deficiency. Compliance with ADs is mandatory

_____ c. Investigation and Enforcement Procedures: Tells us how the FAA enforces the regulations

_____ d. Airworthiness Standards: Propellers Covers the design and testing of propellers

_____ e. Gives us the legal definitions and abbreviations that pertain to all aviation operations, both flight and maintenance

_____ f. Airworthiness Standards: Aircraft Engines: Has detailed specifications for the design, testing and performance of reciprocating and turbine engines

_____ g. Air Taxi Operators and Commercial Operators: Gives the detailed information for flight crewmember requirements and training. Also gives information for aircraft weather operation and maintenance for air taxi and commercial operations

1. FAR PART 13
2. FAR PART 1
3. FAR PART 91
4. FAR PART 39
5. FAR PART 35
6. FAR PART 33
7. FAR PART 135

Certificate Procedures for Products and Parts:

____ h. Describes the different types of certificates that are issued for the design, manufacture and operation of products and parts

Certification: Airmen Other Than Flight Crewmembers:

____ i. Is one of the personnel requirement portions of the FARs. It deals with the certification of mechanics and repairmen as well as air-traffic control tower operators, aircraft dispatchers, and parachute riggers

Aircraft Registration:

____ j. Gives us information to register and transfer the title of an aircraft

Airworthiness Standards: Normal, Utility, and Acrobatic Category Airplanes:

____ k. Includes detailed specifications for the design and testing of airplanes that are certificated in the normal, utility or acrobatic category, and which seat nine people or less, excluding the pilot

Identification and Registration Markings:

____ l. Shows the details of the markings that are required for aircraft identification

Repair Stations:

____ m. Gives the requirements for repair station certification and lists the classes of domestic repair stations

Maintenance, Preventive Maintenance, Rebuilding and Alteration:

____ n. Gives us the legal requirements for maintenance, preventive maintenance, rebuilding and alteration of certificated aircraft

Airworthiness Standards: Transport Category Airplanes:

____ o. Includes detailed specifications for the design and testing of airplanes that are certificated in the transport category

8. FAR PART 21
9. FAR PART 4
10. FAR PART 25
11. FAR PART 23
12. FAR PART 43
13. FAR PART 47
14. FAR PART 65
15. FAR PART 145
16. FAR PART 37

THEORY TEST

4. State facts related to maintenance, preventive maintenance, rebuilding, and alterations in accordance with FAR Part 43. Write the correct answers in the blanks.

   a. What six tasks must be accomplished by the technician before a component can be described as having been overhauled or rebuilt?

      1) ____________________

      2) ____________________

      3) ____________________

      4) ____________________

      5) ____________________

      6) ____________________

   b. What is the difference between rebuilding and overhauling?

      ____

      ____

      ____

   c. Which of the following persons is not authorized to perform maintenance?

      ____

      1) Manufacturer
      2) Private pilot
      3) Repairman
      4) Person supervised by technician
      5) Student pilot

   d. Approval for return to service is a ____________________ entry.

   e. Name three persons authorized to make a return-to-service entry.

      1) ____________________

      2) ____________________

      3) ____________________

   f. Name items required on a maintenance record entry.

      1) ____________________

      2) ____________________

      3) ____________________

4) ____

5) ____

6) ____

g. What advisory circulars contain methods, techniques, and practices acceptable to the administrator? ____________________

5. State facts related to major alterations, major repairs, preventive maintenance, and scope and detail for annual and 100-hour inspections. Write the correct answers in the blanks.

   a. Is a change in empty weight which does not affect maximum certified weight a major alteration? _____

   b. Is overhauling an engine with sun and planetary reduction gears a major repair? _____

   c. Is deep-cycling a nickel-cadmium battery by a pilot on his or her own airplane preventive maintenance? _____

   d. How many copies of Form FAA 337 must be executed? _____

   e. Who receives the original and the copy of Form FAA 337?

      1) Original ______________

      2) Copy ______________

   f. How can the checklist in Appendix D be amended? Circle the number before the correct answer.

      1) It cannot be amended except by the administrator

      2) At the technician's discretion

      3) It can be added to but not subtracted from

      4) It can be subtracted from but not added to

6. State facts related to general eligibility requirements for certification of airmen other than flight crewmembers in accordance with FAR Part 65. Write the correct answers in the blanks.

   a. A certificate remains in effect until ____________________,

      ____________________, or ____________________

b. Within _____ days after a change in permanent mailing address, the holder of a certificate shall notify the Department of Transportation of his or her new address.

c. Can a person who cannot read, write, speak, and understand the English language receive a valid United States A&P Certificate? ______________

d. Can a technician perform preventive maintenance? ____

e. How much time during a 24-month period must a person exercise the privileges of his or her technician certificate to meet the recent experience requirements? ______________________

f. Which of the following are authorized functions of a certificated A&P technician? Circle the number before each true statement.

1) Supervise a 100 hour inspection

2) Perform a 100 hour inspection

3) Approve for return to service after a 100 hour inspection

4) Perform a major repair on a airframe or powerplant

5) Approve for return to service a major alteration or major repair

6) Perform an annual inspection on a powerplant

7) Perform a minor repair or minor alterations to a propeller

g. Which of the following are privileges of an inspection authorization? Circle the number before each true statement.

1) Perform an annual inspection

2) Approve for return to service after an annual inspection

3) Perform a major repair to a propeller

4) Approve for return to service after a major repair or major alteration

5) Supervise a progressive inspection

6) Perform a repair to an instrument

7. State facts related to the purpose and use of advisory circulars, including General Aviation Airworthiness Alerts. Write the correct answers in the blanks.

a. The numbering system for advisory circulars are keyed to the ______ to which they relate.

b. What is the purpose of an advisory circular? ______________________

____

8. State facts related to type certificates.

a. FAR PART 33 sets the minimum design, performance and testing standards for the manufacture of __________ and __________ __________.

b. The three categories in which an airplane may be certificated under FAR PART 23 are ______________ and ______________ and ______________.

c. Specifications of a particular aircraft, aircraft engine, or propeller certificated under FAR PARTs 23, 33, and 35 are made available to the public as ____.

d. Once a type certificate is issued, a manufacturer ______________ make ____ major changes in its type and design with regard to its original certification.

e. Type certificates are issued to manufacturers of __________________, ____________________, or __________________ when the appropriate ____ regulation standards have been met.

f. FAR PART 35 gives the minimum standards for the manufacture of ________________________________.

g. FAR PART ________ gives the standards for certification of airplanes with up to nine passengers.

h. Reciprocating and turbine engines may be certificated under FAR PART ________________.

i. The __________________ of an aircraft, aircraft engine, or propeller provides the FAA with all pertinent specifications when seeking a type certificate.

j. A type certificate is a permit to ____________ an aircraft, aircraft engine or propeller in accordance with FAA approval.

9. State facts related to type certificate data sheets, aircraft specifications, and aircraft listings.

   a. Type certificate data sheets contain the official specifications of certificated ________________, ________________, and ______________.

   b. Manufacturers provide the information for data sheets as part of the type certification process but they are officially available for purchase from the ____.

   c. Type certificate data sheet numbers are the same as the number on the ________________________.

   d. In the aircraft TCDS, information under the "Model" section is specifically related to a certain serial numbered aircraft. Information under the heading "_________ _________ _________ _________ _________" is applicable to all models.

   e. The listing contains the specifications of aircraft, aircraft engines, and propellers of which there are less than ________________ in the FAA registry.

   f. Placards which relate to the operation of the aircraft are usually found under the "________________" section of the aircraft TCDS.

   g. Under the "Equipment" section, required and approved optional aircraft equipment is listed along with its ____________ and location from the ______________________.

10. Select true statements related to supplemental type certificates and parts manufacturers' approvals. Write an "X" in the blank before each correct answer.

   _____a. An STC is an approved alteration

   _____b. Another name for STC is type certificate

   _____c. Once an engine is manufactured there is no way it may be improved by agencies in the field

   _____d. Information contained in an STC is usable as approved data

   _____e. FAA approval to manufacture a certificated propeller is given by issuing an FAA-PMA _____f. If a PMA is simple to fabricate, a certificated mechanic may duplicate that part and use the FAA-PMA symbol

_____g. An STC will always contain enough information to accomplish a conformity inspection applicable to that STC

_____h. An STC, when issued, becomes public property just as most other FAA publications do

_____i. The FAA-PMA symbol on a part relieves the installing mechanic of the responsibility of the part design

_____j. A Supplemental Type Certificate is issued by the manufacturer of a particular aircraft, aircraft engine, or propeller

11. State facts related to the development, publication, and purpose of airworthiness directives.

a. FAR ________________ establishes the authority for the development, publication and use of airworthiness directives.

b. Airworthiness directives are printed and sold by subscription by the ________________________________.

c. If possible, applicable airframe ADs are sent to the ________________ ________________ of the affected aircraft.

d. Airworthiness directives are valid until ________________ by the FAA.

e. Airworthiness directives compliance becomes a very important part of the aircraft ________________ file.

f. The first two digits of an AD number code indicate the ______________ ______________________.

g. The second two digits of an AD number code indicate the ______________ ______________________.

h. The third two digits of the AD number code indicate 1)________________ ____;

the letter "R" indicates 2)____________________________________.

i. All AD compliance entries in maintenance records must show ____________ ______________ and ____________ of the person complying.

j. An AD which requires continued inspection is called a ____________ AD.

k. The most common method of identifying products that require AD compliance is by ____________ ____________.

12. State facts related to the types, availability, and uses of manufacturers' publications. Write the correct answers in the blanks.

a. Guidance for operation and overhaul of an aircraft engine can be found in the ________________________.

b. The latest updates and supplemental information for manufacturers' manuals can be found in the ____________________ and ____________________.

c. Detailed information on applicability, interchangeability, and availability of aircraft parts is found in the ________________________________.

13. Select, read, and interpret FAA regulations, manufacturers' publications, and technical data related to the following statements.

(NOTE: If FARs are the publication used, list the FAR number and section.)

a. Explain the conditions under which a Cessna 172 aircraft cannot operate unless a 100-hour inspection has been performed.

1) Publication used -- ____

2) Explanation -- ____

____

____

____

____

____

____

THEORY TEST

b. Explain conditions under which a Cessna 150 aircraft used for hire cannot operate without a 100-hour inspection and how these conditions relate to the next 100 hours of flying time.

1) Publication used -- ________________________________

2) Explanation -- ________________________________

____

____

____

____

c. John, an aviation maintenance technician, has been assigned by his supervisor to perform maintenance on an aircraft. During the maintenance procedures, John is required to perform a task he has never performed or supervised. Explain the conditions under which John can perform the needed maintenance.

1) Publication used -- ________________________________

2) Explanation -- ________________________________

____

____

____

____

____

d. Janice, an aviation maintenance student, is not a certificated technician. Explain the four requirements Janice must meet to become certificated.

1) Publication used -- ________________________________

2) Explanation -- ________________________________

____

____

____

____

____

e. Explain the content and required compliance of AD 84-20-02 on a Cessna 421C. Explain applicable requirements of any FARS that may be specified in the AD.

1) Content --

2) Required compliance --

3) FAR applicability --

f. For a Cessna Model 172, what is the largest cut or tear in a fuel cell which may be repaired in the field?

1) Publication used --

2) Size of cut or tear --

g. Using TCDS A1850 for the Piper PA-38-12, list the approved propeller and propeller limits and explain Note #3.

14. Interpret a type certificate data sheet.

(NOTE: Test question 14 is a workbook supplement. It is an important part of this test. If it has not been completed, check with your instructor.)

GENERAL
G103 FUNDAMENTALS OF REGULATIONS, PUBLICATIONS, AND RECORDS
SELECT AND USE REGULATIONS, PUBLICATIONS, AND RECORDS
G103-A

ANSWERS TO THEORY TEST

1. a. 4
b. 3
c. 5
d. 6
e. 2
f. 1
g. 8
h. 7
i. 9
j. 13
k. 11
l. 14
m. 10
n. 12
o. 16
p. 15
q. 18
r. 17
s. 20
t. 19
u. 24
v. 21
w. 23
x. 22
y. 25
z. 26
aa. 30
bb. 31
cc. 28
dd. 29
ee. 27
ff. 35
gg. 32
hh. 38
ii. 33
jj. 37
kk. 34
ll. 36
mm. 42
nn. 44
oo. 39
pp. 41
qq. 46
rr. 40
ss. 43
tt. 45
uu. 49
vv. 47
ww. 51
xx. 50
yy. 48
zz. 57
aaa. 60
bbb. 55
ccc. 52
ddd. 54
eee. 61
fff. 53
ggg. 56
hhh. 58
iii. 59
jjj. 63
kkk. 66
lll. 65
mmm. 69
nnn. 67
ooo. 68
ppp. 62
qqq. 64

2. General Aviation District Office

3. a. 3
b. 4
c. 1
d. 5
e. 2
f. 6
g. 7
h. 8
i. 14
j. 13
k. 11
l. 9
m. 15
n. 12
o. 10

4. a. 1) Disassemble
2) Clean
3) Inspect
4) Repair
5) Reassemble
6) Test

b. Something that is rebuilt must meet new part tolerances

ANSWERS TO THEORY TEST

c. Student pilot

d. Maintenance record

e. Answer should include any three of the following

1) FAA administrator

2) Technician

3) Repairman

4) Manufacturer

5) Air carrier

6) Private pilot

f. 1) Description of work completed

2) Date of work completed

3) Name of person performing work

4) Certificate number of the person performing the work

5) Signature of the person performing the work

6) "I certify" statement

g. AC 43.13-1A and 2A

5. a. No
b. Yes
c. Yes
d. 2
e. 1) Registered owner
2) FAA
f. 3

6. a. Surrendered, revoked, suspended
b. 30
c. No
d. Yes
e. Must have at least six months applicable experience in the past 24 months
f. 2, 3, 4, 7
g. 1, 2, 4, 5

ANSWERS TO THEORY TEST

7. a. FARs
   b. To help understand and comply with the FARs

8. a. Reciprocating, turbine engines
   b. Normal, utility, acrobatic
   c. Type certificate data sheets
   d. May not
   e. Aircraft, aircraft engines, or propellers
   f. Propellers
   g. 23
   h. 33
   i. Manufacturer
   j. Manufacture

9. a. Aircraft, aircraft engines, propellers
   b. United States Government Printing Office
   c. Type certificate
   d. "Data pertinent to all models"
   e. Fifty
   f. "Notes"
   g. Weight, datum

10. a, d, g, i

11. a. 39
    b. FAA
    c. Registered owner
    d. Cancelled
    e. Record
    f. Year issued
    g. Biweekly period of the year, beginning with January 1
    h. 1) Order in which the directive was issued during that biweekly period
       2) A revision and revision number
    i. Certificate numbers and signature
    j. Recurring
    k. Serial number

12. a. Overhaul manual
    b. Service letters; service bulletins
    c. Illustrated parts catalog

ANSWERS TO THEORY TEST

13. a. 1) FAR 91.169

    2) According to the FAR, no person may operate, for hire, an aircraft carrying another person or give flight instructions in an aircraft which that person provides, unless the aircraft has had a 100-hour inspection or annual inspection within the preceeding 100 hours of time in service.

b. 1) FAR 91.169

    2) If the aircraft was inspected and received an airworthiness certificate under FAR Part 21, that will be accepted. The aircraft may be operated up to 10 hours beyond the time a 100-hour inspection is required as long as it is being flown to the place where the inspection can be done. The excess time is included, however, in computing the next 100 hours of time in service.

c. 1) FAR 65.81

    2) A technician who has not previously performed a particular item of maintenance, preventive maintenance, or alteration must show the ability to do the maintenance, preventive maintenance, or alteration to the satisfaction of the administrator or be under the direct supervision of an appropriately rated technician or repair-person.

d. 1) FAR 65.71

    2) The minimum requirements for a certificated technician as follows:
        a) 18 years of age
        b) Must be able to read, write, and speak the English language
        c) Must have passed all the prescribed tests within a 24-month period
        d) Must comply with the sections of 65.71 that apply to the rating being sought

e. 1) Content - the AD summary index shows that AD 84-20-02 is applicable to certain Cessna aircraft models 402C, 404, 414A, 421C, 425, and 441. These aircraft are identified by serial number grouping. The reason for the issuance of the AD is to prevent collapse of the nose landing gear. The AD calls for the following

        a) Replacement of the nose landing gear actuator rod ends in accordnace with certain Cessna service letters.

        b) The aircraft may be flown to a place where the work may be accomplished but before being flown to the maintenance shop, the aircraft must meet the requirements of FAR 21.197.

    2) Requied compliance - Compliance is required within the next 200 hours of time in service after the effective date of the AD

    3) FAR Applicability - FAR 21.197

An equivalent method of repair may be used, if approved by the FAA and the names and addresses of the appropriate people are listed.

f. 1) Service Manual - Cessna 100 Series, 1962 and Prior
   2) One inch

g. Approved propeller: Senich 72 CK-0-56
Propeller limits: Should not exceed 2,350 rpm
Should not be under 2,250 rpm during a static rpm check

NOTE #3 establishes the service life of the wing and associated structure at 11,000 hours maximum.

14. Evaluated to the satisfaction of the instructor

MODULE OF INSTRUCTION
FOR
AVIATION MAINTENANCE TECHNOLOGY

GENERAL
G103 FUNDAMENTALS OF REGULATIONS, PUBLICATIONS AND RECORDS
EXERCISE MECHANIC'S PRIVILEGES AND LIMITATIONS
G103-B

GENERAL
G103 FUNDAMENTALS OF REGULATIONS, PUBLICATIONS, AND RECORDS
EXERCISE MECHANIC'S PRIVILEGES AND LIMITATIONS
G103-B

MODULE CONTENTS

A. Introduction and Module Objective

B. Specific Objectives

C. Instructor's Module Implementation Guide

D. Technical Information Supplements

  1. Technical Information Supplement #1 - Terms and Definitions
  2. Technical Information Supplement #2 - Basic Aircraft Inspection Principles According to FAR Part 43, Appendix D

E. Workbook Supplements

  1. Workbook Supplement #1 - Interpret FAR Part 65
  2. Workbook Supplement #2 - Interpret FAR Parts 43 and 91

F. Answers to Workbook Supplements

G. Theory Test

H. Answers to Theory Test

GENERAL
G103 FUNDAMENTALS OF REGULATIONS, PUBLICATIONS, AND RECORDS
EXERCISE MECHANIC'S PRIVILEGES AND LIMITATIONS
G103-B

INTRODUCTION

Keeping many different kinds of airplanes, helicopters and other types of aircraft in the air is a big job! How any aircraft can continually and safely operate is dependent upon a good maintenance system. At the heart of this system are the aircraft maintenance technicians, more commonly known as A&P mechanics. Their skill and integrity must be far above average. They must be aware of their privileges and limitations before inspecting, servicing, and repairing aircraft.

MODULE OBJECTIVE

After completion of this module, you will be able to determine authority for return-to-service, list mechanic's privileges and limitations and interpret federal air regulations. You will demonstrate this knowledge by completing the procedures outlined in the workbook assignments. You will further demonstrate this knowledge by scoring 85 percent on the module theory test.

GENERAL
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EXERCISE MECHANIC'S PRIVILEGES AND LIMITATIONS
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SPECIFIC OBJECTIVES

After completion of this module, you will be able to:

1.	Match terms related to maintenance and inspection to their correct definitions. (1)	Technical Supplement #1 FAR Part 1
2.	Describe the privileges of a certified repairman. (1)	EA-ITP-G 7:III:49 FAR Part 65:10-11
3.	List the privileges of a certificated mechanic with airframe and powerplant ratings. (1)	EA-ITP-G 7:III:48 FAR 65.81 FAR 65.85 FAR 65.87 FAR 43 Subparts 3,5,7
4.	Select true statements related to requirements for issuance of inspection authorization. (1)	FAR 65.91 EA-ITP-G 7:III:48-49 EA-ITP-GW 7:10
5.	Select the privileges of a mechanic with an inspection authorization. (1)	FAR 65.95 EA-ITP-G 7:III:49 EA-ITP-GW 7:10
6.	State facts related to the duration, loss, destruction, suspension, and revoking of repairman, airframe, and/or powerplant and inspection authorization certificates. (1)	EA-ITP-G 7:III:48-49 FAR Parts 65.12, .13, .15, .16, .18, .92 EA-ITP-GW 7:III:9-10
7.	Define the types of maintenance and the certificate rating required for approval for return-to-service. (1)	EA-ITP-G 7:III:48, 57-58 FAR Part 43, Appendix A FAR Part 65, Subpart D FAR Part 91, Subpart C EA-ITP-GW 7:10-11
8.	Define the types of inspections and the certificate rating required for approval for return-to-service. (1)	EA-ITP-G 7:III:58,60-64, 69-88 FAR Part 43, Appendices D,E,F FAR Part 65, Subpart D,E,F FAR Part 91, Subpart C EA-ITP-GW 7:10-12

SPECIFIC OBJECTIVES

9. List the three classifications of basic aircraft inspection principles. (1)	Technical Supplement #2 FAR Part 43, Appendix D
10. Interpret FAR Part 65. (3)	FAR Part 65 Workbook Supplement #1
11. Interpret FAR Parts 43 and 91. (3)	FAR Parts 43 and 91 Workbook Supplement #2

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EXERCISE MECHANIC'S PRIVILEGES AND LIMITATIONS
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INSTRUCTOR'S MODULE IMPLEMENTATION GUIDE

(NOTE: Have students read all material related to the specific objectives.)

Estimated Teaching Time		Theory	Lab
Objective 1	Explain terms and definitions related to maintenance and inspection. Use ITP Aircraft Technical Dictionary as reference and FARs.		
Objective 2	Explain to the students the privileges and limitations of a certified repairman. Present for class discussion examples of these privileges and limitations.		
Objective 3	Explain the privileges and limitations of the certificated mechanic as described in FAR Part 65. Have students read FAR Parts 65.81, 65.85, 65.87, 43.3, 43.5, and 43.7.		
Objectives 4-5	Explain the requirements and privileges of a mechanic with inspection authorization as described in FAR Parts 65.91, 65.92, 65.93, and 65.95. Have students complete EA-ITP-GW, Part VII, page 10. Assist students as necessary.		
Objective 6	Explain the facts about the duration, loss, destruction, suspension, and revoking of a repairman airframe and/ or powerplant and inspection authorization certificate as described in FAR Parts 65.12, 65.13, 65.15, 65.16, 65.18, 65.92.		
Objectives 7-8	Explain the types of maintenance and inspections required by FARs Parts 43 and 91 and ratings of persons required to return to service said items according to FAR Part 65.		

INSTRUCTOR'S MODULE IMPLEMENTATION GUIDE

Estimated Teaching Time		Theory	Lab
Objective 9	Explain the principles of basic visual and operational inspection and ways to check for conformity to FARs.		
Objective 10	Discuss Workbook Supplement #1 with students. Have students complete Workbook Supplement #1. Assist students as necessary.		
Objective 11	Discuss Workbook Supplement #2 with students. Have students complete Workbook Supplement #2. Assist students as necessary.		

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G103 FUNDAMENTALS OF REGULATIONS, PUBLICATIONS, AND RECORDS
EXERCISE MECHANIC'S PRIVILEGES AND LIMITATIONS
G103-B

TECHNICAL INFORMATION SUPPLEMENT #1 - Terms and Definitions

A. Certificated mechanic/A&P technician - Person who holds a valid mechanic's certificate issued by the Federal Aviation Administration with ratings of either an airframe mechanic, powerplant mechanic, or both

B. AC 43.13-1A and 2A - Advisory circular in book form issued by Federal Aviation Administration; covers acceptable methods, techniques, and practices for aircraft inspection and repair in accordance with FAR Part 43

C. Administrator - Any FAA-authorized person with the Department of Transportation which establishes the rules and regulations as well as enforces those rulings

D. Aircraft - Any weight-carrying device designed to be supported by air

E. Aircraft inspection - Systematic check of aircraft and its components to determine by sight, feel, measurement, or other means its present state of condition

(NOTE: Annual, 100-hour, calendar, progressive, and preflight inspections are common types.)

F. Aircraft repair - Restoration of an aircraft and its components to an airworthy condition after failure, damage, or wear has occurred

G. Airplane - Engine-driven, fixed-wing aircraft, heavier than air and supported in flight by dynamic reaction of air against its wings

H. Alteration - Any change in configuration or design of an aircraft, aircraft engine, or component

I. Annual inspection - Complete inspection of an aircraft and its engine that is required by Federal Aviation Regulations; must be accomplished every 12 calendar months

(NOTE: Only an A&P mechanic holding an Inspection Authorization can conduct an annual inspection.)

J. Approved data - Data approved by the Administrator

K. Conformity - Meeting all requirements of original or properly altered conditions as specified in Type Certificate Data Sheets and manufacturer's specifications

L. FAA Form 337 - Major Repair and Alteration Form

M. General aviation - Portion of aviation industry other than military aviation or commercial airlines

N. Inspection authorization (IA) - Authorization issued by the FAA to experienced A&P mechanics who meet the requirements of FAR Part 65; allows mechanics to approve aircraft for return to service after annual inspections or certain major repairs

O. Overhaul - The method, techniques, and practices acceptable to the Administrator for overhauling an aircraft, aircraft engine, or component according to FAR Part 43.2

P. Placard - Notice placed in or on aircraft to depict pertinent information related to the aircraft, such as its operation or particular components limitation

Q. Preflight inspection - Inspection of aircraft before operations to determine that all required systems operate in accordance with recommended preflight guidelines

R. Return to service - Any action by any person to put an aircraft or article into operational status after it has been maintained or altered applicable to FAR Part 43.5

S. Maintenance manual - Manual offered by the manufacturer of an aircraft, aircraft engine, or component, which describes approved methods of servicing and repairing

T. Approval for return-to-service - Maintenance record entry by an authorized person or individual applicable to FAR Part 43.7

TECHNICAL INFORMATION SUPPLEMENT #2 - Basic Aircraft Inspection Principles According to FAR Part 43, Appendix D

A. Visual inspection

EXAMPLES:
1. Look for cracks, cuts, bruises, or tears
2. Check for looseness, tightness, chafing, roughness, movement, or extreme rigidity
3. Look for damage, including hidden damage
4. Check condition of aircraft structure and finish

B. Operational inspection

EXAMPLES:
1. Check operation, servicing, safetying, and baffles
2. Clean and inspect screen and filters
3. Look for potential problems

C. Conformity inspection

EXAMPLES:
1. Check adjustments and tolerances
2. Check compliances for FAR, AD, and required equipment
3. Take measurements
4. Make sure maintenance records are complete

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EXERCISE MECHANIC'S PRIVILEGES AND LIMITATIONS
G103-B

WORKBOOK SUPPLEMENT #1 - Interpret FAR Part 65

The knowledge of and the ability to use the various Federal Air Regulations (FARs) is an essential part of the mechanic's resources. This workbook supplement will help you to interpret and understand regulations pertaining to maintenance and inspection and what certificate rating is necessary for return-to-service approval. Using FAR Part 65 complete the following statements related to certificated mechanics and repairmen.

A. A ______________________ mechanic certificate is good for 120 days.

B. A mechanic's certificate is effective until it is ____________________,

______________________, or ______________________.

C. A name change or replacement of a lost or destroyed certificate can be

taken care of by contacting the ______________________

______________________ with the presentation of proper documentation.

D. The FAA must be notified in writing within ________________ of any change of address.

E. A certificated mechanic with an airframe rating may approve and return to

service an ______________ or ______________________

________________ after ______________________

____

____

F. Each person who holds a mechanic certificate shall keep it ____________

______________________; and shall present it to proper authorities upon request.

G. Each inspection authorization expires on ______________________ of each year.

H. The repairman may not perform or supervise duties under his certificate

unless the repairman understands the current ______________________

____

____

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G103 FUNDAMENTALS OF REGULATIONS, PUBLICATIONS, AND RECORDS
EXERCISE MECHANIC'S PRIVILEGES AND LIMITATIONS
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WORKBOOK SUPPLEMENT #2 - Interpret FAR Parts 43 and 91

As an aviation maintenance technician you must have knowledge of, and the ability to use the various Federal Air Regulations (FARs). This workbook supplement will help you to develop competency in the interpretation of FAR Parts 43 and 91. Using FAR Parts 43 and 91, complete the following statements related to the types of maintenance and inspections performed by authorized persons.

A. FAR Part ____________ will give the persons authorized to approve aircraft airframes, aircraft engines, propellers, appliances, or component parts for return-to-service after maintenance, preventive maintenance, rebuilding, or alteration.

B. The holder of an air carrier operating certificate or an operating certificate issued under FAR Parts ________________, ________________, or ____________________ may approve an aircraft, airframe, aircraft engine, propeller, appliance, or component part for return-to-service according to these FARs.

C. Each person performing an annual or 100-hour inspection shall, before that inspection, remove or open all necessary inspection plates, access doors, fairing, and cowling. He shall then ________________________________ the ____________ and ________________________ before continuing his inspection.

D. No person may operate an aircraft carrying any person (other than a crewmember) for hire, and no person may give flight instruction for hire, unless within the preceding ________________________ in service it has received an ___________________ or ____________________________________ and has been approved for return-to-service.

E. A __________________ inspection program is one which includes all of the elements of the 100-hour or annual inspection, but spreads them over a 12 calendar month period.

F. Aircraft operated under certain parts of the FAR Parts 121, 127, or 135 use the __________________ inspection program.

G. No person may operate an aircraft under IFR unless within the preceding ______________________ each altimeter and static pressure system has been inspected and tested according to FAR 43, Appendix E.

H. A certified mechanic holding an ______________________________ can conduct a progressive inspection of an aircraft for return-to-service.

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EXERCISE MECHANIC'S PRIVILEGES AND LIMITATIONS
G103-B

ANSWERS TO WORKBOOK SUPPLEMENTS

Workbook Supplement #1

A. Temporary

B. Surrendered, suspended, revoked

C. Department of Transportation
FAA Airman's Certification Branch
P.O. Box 25082
Oklahoma City, Oklahoma 73125

D. 30 days

E. Airframe or any related part or appliance, after he has performed, supervised, or inspected its maintenance or alteration (excluding major repairs and alterations)

F. Within the immediate area where he normally exercises the privileges of the certificate

G. March 31

H. Instructions of both the operator and the manufacturer relating to the specific operations concerned

Workbook Supplement #2

A. Part 43.7

B. Parts 121, 127, or 135

C. Thoroughly clean, aircraft, powerplant

D. 100 hours, annual, 100-hour inspection

E. Progressive

F. Continuous

G. 24 months

H. Inspection authorization

GENERAL
G103 FUNDAMENTALS OF REGULATIONS, PUBLICATIONS, AND RECORDS
EXERCISE MECHANIC'S PRIVILEGES AND LIMITATIONS
G103-B

THEORY TEST

1. Match terms related to maintenance and inspection to their correct definitions. Write the correct numbers in the blanks.

____a. Restoration of an aircraft and its components to an airworthy condition after failure, damage, or wear has occurred

____b. Advisory circular in book form issued by Federal Aviation Administration; covers acceptable methods, techniques, and practices for aircraft inspection and repair in accordance with FAR Part 43

____c. Systematic check of aircraft and its components to determine by sight, feel, measurement, or other means its present state of condition

____d. Major Repair and Alteration Form

____e. Authorization issued by the FAA to experienced A&P mechanics who meet the requirements of FAR Part 65; allows mechanics to approve aircraft for return-to-service after annual inspections or certain major repairs

____f. Any change in configuration or design of an aircraft, aircraft engine, or component

____g. Person who holds a valid mechanic's certificate issued by the Federal Aviation Administration with ratings of either an airframe mechanic, powerplant mechanic, or both

____h. Portion of aviation industry other than military aviation or commercial airlines

1. Aircraft inspection
2. Inspection authorization (IA)
3. Alteration
4. AC 43.13-1A and 2A
5. FAA Form 337
6. Aircraft repair
7. Certificated mechanic/A&P technician
8. General aviation

THEORY TEST

_____ i. Any FAA-authorized person with the Department of Transportation which establishes the rules and regulations as well as enforces those rulings

_____ j. Complete inspection of an aircraft and its engine that is required by Federal Aviation Regulations; must be accomplished every 12 calendar months

_____ k. Manual offered by the manufacturer of an aircraft, aircraft engine, or component, which describes approved methods of servicing and repairing

_____ l. Data approved by the Administrator

_____ m. Any weight-carrying device designed to be supported by air

_____ n. Meeting all requirements of original or properly altered conditions as specified in Type Certificate Data Sheets and manufacturer's specifications

_____ o. Engine-driven, fixed-wing aircraft, heavier than air and supported in flight by the dynamic reaction of air against its wings

9. Administrator
10. Maintenance manual
11. Conformity
12. Aircraft
13. Approved data
14. Annual inspection
15. Airplane

THEORY TEST

____ p. The method, techniques, and practices acceptable to the Administrator for overhauling an aircraft, aircraft engine, or component according to FAR Part 43.2

____ q. Any action by any person to put an aircraft or article into operational status after it has been maintained or altered applicable to FAR Part 43.5

____ r. Notice placed in or on aircraft to depict pertinent information related to the aircraft, such as its operations or particular components limitation

____ s. Inspection of aircraft before operations to determine that all required systems operate in accordance with recommended preflight guidelines

____ t. Maintenance record entry by an authorized person or individual applicable to FAR Part 43.7

16. Approval for return-to-service

17. Placard

18. Preflight inspection

19. Return-to-Service

20. Overhaul

2. Describe the privileges of a certified repairman -- ____________________

____

____

____

____

____

____

____

____

____

____

THEORY TEST

3. List the privileges of a certificated mechanic with airframe and powerplant ratings.

   a. ____

   b. ____

   c. ____

   ____

4. Select true statements related to the requirements for issuance of an inspection authorization. Circle the letter before each true statement.

   a. Must hold a currently effective mechanic certificate with both airframe and powerplant ratings, each of which is currently effective and has been continuously in effect for not less than the five-year period immediately before the date of application

   b. Have a fixed base of operations at which he or she may be located in person or by telephone during a normal working week, but not necessarily the place where inspection authority will be executed

   c. Have available the equipment, facilities, and inspection data necessary to properly inspect airframes, propellers, or any related part or appliance

   d. Have been actively engaged, for at least the five-year period before the date he or she applies, in maintaining aircraft that is certificated and maintained in accordance with FAR Part 65

   e. Pass written test on ability to inspect according to safety standards for returning aircraft to service after major repairs and major alterations and annual and progressive inspections performed under FAR Part 43

5. Select the privileges of a mechanic with an inspection authorization. Circle the letter before each correct statement.

   a. Inspect and approve for return-to-service any aircraft or related part or appliance, except any aircraft maintained in accordance with a continuous airworthiness program under FAR Part 121 or FAR Part 127, after a major repair or major alteration to it

   b. Perform a major repair or alteration to a propeller

   c. Perform an annual inspection, or perform or supervise a progressive inspection

THEORY TEST

6. State facts related to the duration, loss, destruction, suspension, and revoking of repairman, airframe, and/or powerplant and inspection authorization certificates. Write the correct answers in the blanks.

   a. How long are the following certificates valid?

      1) Mechanic ____

      ____

      2) Repairman ____

      ____

      3) Temporary ____

      4) Inspection authorization ________________________________

   b. Where would you apply for the replacement of a lost or destroyed mechanic certificate?

      ____

      ____

      ____

      ____

      ____

7. Define the types of maintenance and the certificate rating required for approval for return-to-service. Write the correct answers in the blanks.

   a. Maintenance -- ____

      ____

      ____

      Authorization to approve for return-to-service -- __________

      ____

b. Preventive maintenance -- ____________________

____

____

____

____

Authorization to approve for return-to-service -- __________

____

c. Minor repair -- ____________________________

____

____

Authorization to approve for return-to-service -- __________

____

d. Minor alteration -- __________________________

____

____

Authorization to approve for return-to-service -- __________

____

e. Major repair -- ____________________________

____

____

____

____

____

Authorization to approve for return-to-service -- __________

____

f. Major alteration -- ______________________________________

Authorization to approve for return-to-service -- ______________

8. Define the types of inspections and the certificate rating required for approval for return-to-service. Write the correct answers in the blanks.

a. 100-hour inspection -- ______________________________________

Authorization to approve for return-to-service -- ______________

b. Annual inspection -- ______________________________________

Authorization to approve for return-to-service -- ______________

c. Progressive inspection -- ______________________________________

Authorization to approve for return-to-service -- ______________

d. Altimeter and static system inspection -- ____________________

____

____

____

Authorization to approve for return-to-service -- ______________

____

9. List the three classifications of basic aircraft inspection principles.

a. ____

b. ____

c. ____

(NOTE: Test questions 10-11 are workbook supplements. They are an important part of this test. If they have not been completed, check with your instructor.)

10. Interpret FAR Part 65.

11. Interpret FAR Parts 43 and 91.

GENERAL
G103 FUNDAMENTALS OF REGULATIONS, PUBLICATIONS, AND RECORDS
EXERCISE MECHANIC'S PRIVILEGES AND LIMITATIONS
G103-B

ANSWERS TO THEORY TEST

1. a. 6
   b. 4
   c. 1
   d. 5
   e. 2
   f. 3
   g. 7
   h. 8
   i. 9
   j. 14
   k. 10
   l. 13
   m. 12
   n. 11
   o. 15
   p. 20
   q. 19
   r. 17
   s. 18
   t. 16

2. Description should include the following

   A certified repairman may perform or supervise the maintenance, preventive maintenance, or alteration of aircraft or aircraft components appropriate to the job for which the repairman was employed and certificated, but only in connection with duties for the certificate holder by whom the repairman was employed and recommended

3. a. Maintenance
   b. Preventive maintenance
   c. Alteration of an aircraft or appliance of a part thereof, for which he is rated

4. b, c, e

5. a, c

6. a. 1) It is effective until surrendered, suspended or revoked
   2) For as long as he is employed by the facility that recommended him for the certificate
   3) 120 days
   4) All inspection authorizations expire on March 31 of each year

   b. The Department of Transportation
   FAA Airman's Certification Branch
   P.O. Box 25082
   OKlahoma City, OK 73125

7. a. Inspection, overhaul, repair, preservation, and the replacement of parts; excludes preventive maintenance

   A&P mechanic or inspection authorization

   b. Simple or minor preservation operations and the replacement of small standard parts not involving complex assembly operations; may be done by a pilot with at least a private certificate on an airplane that is owned or operated by him or her

   A&P mechanic or inspection authorization

   c. Repair other than a major repair

   A&P mechanic or inspection authorization

   d. Alteration other than a major alteration

   A&P mechanic or inspection authorization

   e. A repair that, if improperly done, might appreciably affect weight, balance, structural strength, performance, powerplant operation, flight characteristics, or other qualities affecting airworthiness; or a repair that is not done according to accepted practices or cannot be done by elementary operations

   Inspection authorization

   f. Alteration not listed in the aircraft, aircraft engine, or propeller specifications that might appreciably affect weight, balance, structural strength, performance, powerplant operation, flight characteristics, or other qualities affecting airworthiness; or a repair that is not done according to accepted practices or cannot be done by elementary operations

   Inspection authorization

8. a. No person may operate an aircraft to carry persons for hire, nor give flight instruction for hire unless within the preceeding 100 hours of time in service it has received an annual or 100-hour inspection and been approved for return-to-service

   A&P mechanic, inspection authorization

   b. No person may operate an aircraft unless, within the preceding 12 calendar months it has had an annual inspection in accordance with FAR Part 43

   Inspection authorization

ANSWERS TO THEORY TEST

c. Each registered owner or operator of an aircraft can submit a written request to the FAA Flight Standards District Office and provide current information according to FAR Part 91.169 for approval

Inspection authorization

d. No person may operate an airplane in controlled airspace under IFR unless it has been inspected according to FAR Part 91.171 and FAR Part 43, Appendix E

Airframe mechanic or inspection authorization

9. a. Visual
   b. Operational
   c. Conformity

10. Evaluated to the satisfaction of the instructor

11. Evaluated to the satisfaction of the instructor

MODULE OF INSTRUCTION
FOR
AVIATION MAINTENANCE TECHNOLOGY

GENERAL
G103 FUNDAMENTALS OF REGULATIONS, PUBLICATIONS, AND RECORDS
DOCUMENT AIRCRAFT RECORDS
G103-C

GENERAL
G103 FUNDAMENTALS OF REGULATIONS, PUBLICATIONS, AND RECORDS
DOCUMENT AIRCRAFT RECORDS
G103-C

MODULE CONTENTS

A. Introduction and Module Objective

B. Specific Objectives

C. Instructor's Module Implementation Guide

    1. Instructional Supplement #1--Aircraft Record File

D. Technical Information Supplements

    1. Technical Information Supplement #1--Terms and Definitions

    2. Technical Information Supplement #2--Aircraft Record File

E. Workbook Supplements

    1. Workbook Supplement #1--Interpret FAR Parts 43 and 91, Requirements Related to Aircraft Record Files

    2. Workbook Supplement #2--Interpret FAR Part 43, Requirements Related to Inspection Record Entries

    3. Workbook Supplement #3--Perform Log Book Entries for Maintenance and Inspection

    4. Workbook Supplement #4--Interpret FAR Part 91 Applicable to Aircraft Airworthiness Directives

    5. Workbook Supplement #5--Perform Maintenance Record Entries of Airworthiness Directives Compliance

    6. Workbook Supplement #6--Interpret Form FAA 337 and FAR I, Part 43, Appendix B

F. Answers to Workbook Supplements

G. Theory Test

H. Answers to Theory Test

GENERAL
G103 FUNDAMENTALS OF REGULATIONS,PUBLICATIONS, AND RECORDS
DOCUMENT AIRCRAFT RECORDS
G103-C

INTRODUCTION

Aircraft maintenance records give the A&P technician the best overall picture of the past condition of an aircraft; they are also used to determine the future maintenance and inspections necessary for the airworthiness of the aircraft. The Federal Aviation Regulations contain the terminology and rules used for proper documentation of maintenance records. These publications are often complicated and difficult to interpret by the beginning A&P technician, but you must understand and apply them with total competence.

MODULE OBJECTIVE

After completion of this module, you will be able to analyze aircraft records and prepare aircraft record files. You will demonstrate this knowledge by completing the procedures outlined in the workbook supplements and by scoring 85 percent on the module theory test.

GENERAL
G103 FUNDAMENTALS OF REGULATIONS, PUBLICATIONS, AND RECORDS
DOCUMENT AIRCRAFT RECORDS
G103-C

SPECIFIC OBJECTIVES

After completion of this module, you will be able to

1.	Match terms related to aircraft maintenance records to their correct definitions. (1)	Technical Supplement #1
2.	State facts related to aircraft permanent and temporary records and the forms used to document the records. (1)	EA-ITP-G 7:IV:94-100 EA-ITP-GW 7:IV:12 FAR 1 Part 91 EA-IAR V and III
3.	List documents in an aircraft record file and explain their purposes. (1)	Technical Supplement #2
4.	Interpret FAR Parts 43 and 91 requirements related to aircraft record files. (3)	FAR Parts 43 and 91 Workbook Supplement #1
5.	Explain the relationship between an inspection checklist and Appendix D of FAR Part 43. (2)	EA-ITP-G 7:III:69-70 EA-ITP-G 7:III:75-80 FAR 1 Part 43.15 Workbook Supplement #2
6.	Perform log book entries for maintenance and inspection. (3)	EA-IAR VI:47-49 EA-ITP-GW 7:23-25 Workbook Supplement #3
7.	Interpret FAR Part 91 applicable to aircraft airworthiness directives. (3)	FAR 1 Parts 39 and 91 Workbook Supplement #4
8.	Perform maintenance record entries of airworthiness directives compliance. (3)	EA-IAR VI:49-51 and 54-55 Workbook Supplement #5
9.	Interpret Form FAA 337 and FAR 1 Part 43, Appendix B. (3)	EA-ITP-G 7:III:68 EA-ITP-G 7:IV:95, 97-99 EA-ITP-GW 7:IV:12 FAR 1, Part 43, Appendix B EA-IAR VI:50-53, 56-57 Workbook Supplement #6

GENERAL
G103 FUNDAMENTALS OF REGULATIONS, PUBLICATIONS, AND RECORDS
DOCUMENT AIRCRAFT RECORDS
G103-C

INSTRUCTOR'S MODULE IMPLEMENTATION GUIDE

I. Order materials to supplement module

A. Videotapes

1. *Aircraft 100-Hour/Annual Inspections*, EA-HAS

2. *Inspection and Maintenance Records*, EA-IAR

(NOTE: These materials are available from Aviation Maintenance Publishers, Inc., P.O. Box 36, 1000 College View Drive, Riverton, Wyoming 82501.)

3. *FAR 43 - Annual Inspection*

(NOTE: This is available from the Oklahoma State Department of Vocational and Technical Education, 1500 West Seventh, Stillwater, Oklahoma 74074.)

B. Manuals

1. *Preventive Maintenance for Pilots and Aircraft Owners*, ISBN 0-89100-059-3

2. *Aircraft Inspection and Maintenance Records*, EA-IAR

(NOTE: These manuals are available from Aviation Maintenance Publishers, Inc., P.O. Box 36, 1000 College View Drive, Riverton, Wyoming 82501.)

II. Implementation suggestions

(NOTE: Have students read material related to specific objectives.)

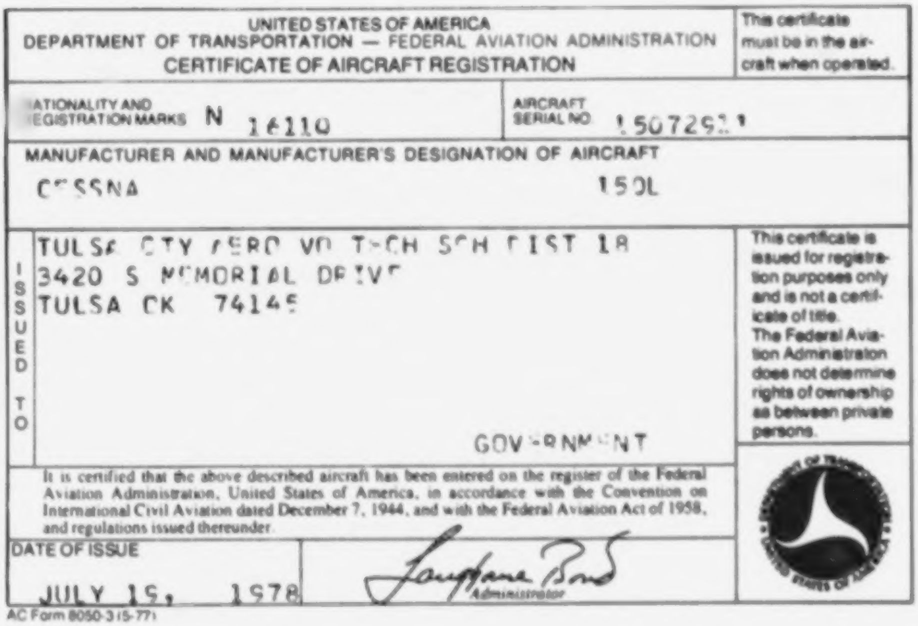
Estimated Teaching Time		Theory	Lab
Objective 1	Refer to actual aircraft records and explain meanings of terms and definitions listed in Technical Supplement #1.		
Objective 2	Have students read EA-ITP-G7:IV: 94-100. Conduct class discussion over reading assignments. Have students complete EA-ITP-GW 7:IV:12. Assist students as necessary.		

Estimated Teaching Time		Theory	Lab
Objectives 3-4	Provide students with a copy of Instructional Supplement #1 - Aircraft Record File. (Note: The records in this supplement do not all relate to the same aircraft or owner.) Make transparencies of aircraft record file. Discuss with students the purpose of each item found in an aircraft record file. Have students complete Workbook Supplement #1. Assist students as necessary.		
Objective 5	Have students read FAR Part 43, Appendix D. Explain the relationship between FAR Part 43, Appendix D and the inspection checklist. Be sure to emphasize the importance of completing an inspection before beginning any work on the aircraft. Show videotapes, *Aircraft 100-Hour/Annual Inspections* and *FAR Part 43-Annual Inspection*. Have students complete Workbook Supplement #2. Assist students as necessary.		
Objective 6	Explain the importance of making proper log entries. Make students aware of the necessity of preparing log book entries that are easily read. Show videotape, *Inspection and Maintenance Records*. Have students read EA-IAR, section VI, pages 41-49 and complete Workbook Supplement #3. Assist students as necessary.		
Objectives 7-8	Explain the importance of proper interpretation of FAR 91 on Airworthiness directives. Show several methods of entering their compliance in the maintenance records. Have students complete Workbook Supplements #4 and #5. Assist students as necessary.		
Objective 9	Explain the importance of filling out Form FAA 337 correctly. Have students read EA-ITP-G 7:III:68 and 7:IV:97-99 and complete EA-ITP-GW 7:IV:12 questions 4 and 5 and Workbook Supplement #6. Assist students as necessary.		

GENERAL
G103 FUNDAMENTALS OF REGULATIONS, PUBLICATIONS, AND RECORDS
DOCUMENT AIRCRAFT RECORDS
G103-C

INSTRUCTOR'S MODULE IMPLEMENTATION GUIDE

INSTRUCTIONAL SUPPLEMENT #1--AIRCRAFT RECORD FILE



UNITED STATES OF AMERICA
DEPARTMENT OF TRANSPORTATION — FEDERAL AVIATION ADMINISTRATION
CERTIFICATE OF AIRCRAFT REGISTRATION

This certificate must be in the aircraft when operated.

ATIONALITY AND EGISTRATION MARKS: N 16110

AIRCRAFT SERIAL NO.: 15072921

MANUFACTURER AND MANUFACTURER'S DESIGNATION OF AIRCRAFT: CESSNA 150L

ISSUED TO:
TULSA CTY AERO VO TECH SCH DIST 18
3420 S MEMORIAL DRIVE
TULSA OK 74145

GOVERNMENT

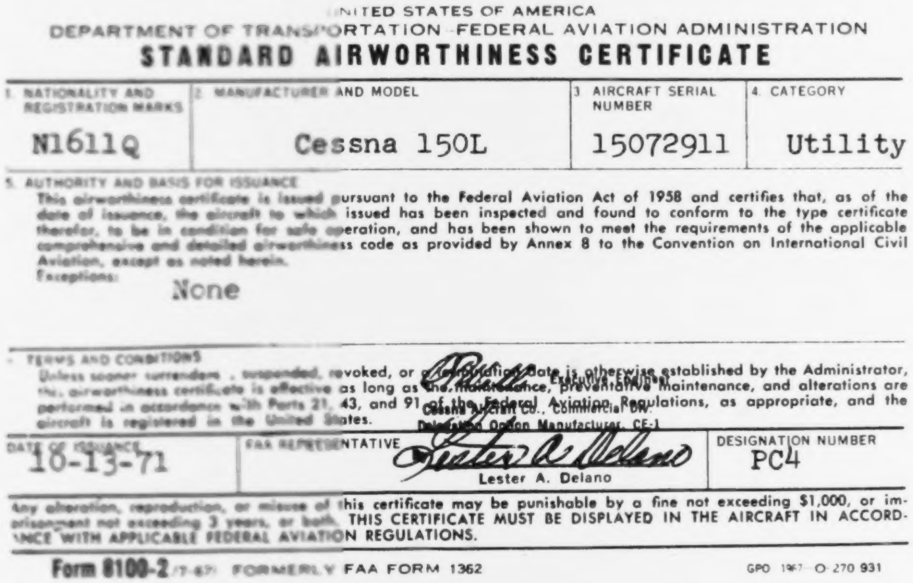
This certificate is issued for registration purposes only and is not a certificate of title. The Federal Aviation Administration does not determine rights of ownership as between private persons.

It is certified that the above described aircraft has been entered on the register of the Federal Aviation Administration, United States of America, in accordance with the Convention on International Civil Aviation dated December 7, 1944, and with the Federal Aviation Act of 1958, and regulations issued thereunder.

DATE OF ISSUE: JULY 19, 1978

Langhorne Bond
Administrator

AC Form 8050-3 (5-77)



UNITED STATES OF AMERICA
DEPARTMENT OF TRANSPORTATION - FEDERAL AVIATION ADMINISTRATION

STANDARD AIRWORTHINESS CERTIFICATE

1. NATIONALITY AND REGISTRATION MARKS	2. MANUFACTURER AND MODEL	3. AIRCRAFT SERIAL NUMBER	4. CATEGORY
N1611Q	Cessna 150L	15072911	Utility

5. AUTHORITY AND BASIS FOR ISSUANCE

This airworthiness certificate is issued pursuant to the Federal Aviation Act of 1958 and certifies that, as of the date of issuance, the aircraft to which issued has been inspected and found to conform to the type certificate therefor, to be in condition for safe operation, and has been shown to meet the requirements of the applicable comprehensive and detailed airworthiness code as provided by Annex 8 to the Convention on International Civil Aviation, except as noted herein.

Exceptions: None

6. TERMS AND CONDITIONS

Unless sooner surrendered, suspended, revoked, or a termination date is otherwise established by the Administrator, this airworthiness certificate is effective as long as the maintenance, preventative maintenance, and alterations are performed in accordance with Parts 21, 43, and 91 of the Federal Aviation Regulations, as appropriate, and the aircraft is registered in the United States.

Executive Engineer
Cessna Aircraft Co., Commercial Div.
Delegation Option Manufacturer, CE-1

DATE OF ISSUANCE	FAA REPRESENTATIVE	DESIGNATION NUMBER
10-13-71	Lester A. Delano Lester A. Delano	PC4

Any alteration, reproduction, or misuse of this certificate may be punishable by a fine not exceeding $1,000, or imprisonment not exceeding 3 years, or both. THIS CERTIFICATE MUST BE DISPLAYED IN THE AIRCRAFT IN ACCORDANCE WITH APPLICABLE FEDERAL AVIATION REGULATIONS.

Form 8100-2 (7-67) FORMERLY FAA FORM 1362 GPO 1967 O-270 931

INSTRUCTIONAL SUPPLEMENT #1

FCC Form 556
May 1967

United States of America
FEDERAL COMMUNICATIONS COMMISSION
AIRCRAFT RADIO STATION LICENSE
(Must be posted aboard the aircraft)

FAA NUMBER OR FCC CONTROL NO.	NO. AIRCRAFT IN FLEET	ISSUE DATE	EXPIRATION DATE
N9038T		JUN 23 69	JUN 23 74

FREQUENCIES

PRIVATE AIRCRAFT (SECTION 87.201)

PLEASE REPORT ADDRESS CHANGES PROMPTLY

FRANK VENAGSIA
1806 STANFORD NE
ALBUQUERQUE NMEX 87106

TRANSMITTERS

MANUFACTURER	TYPE NUMBER
NATIONAL AERONAUTICAL CORP	VTR-2A

In addition to any transmitters which may be listed above and consistent with the frequencies authorized hereon, the licensee is authorized to use any transmitter type accepted by the Commission for use in aircraft stations on frequencies in the band 118-136 Mc/s. Note that type acceptance of the following transmitters is withdrawn effective January 1, 1970 and their use beyond that date is not authorized. Aircraft Specialty TR-1; Avtek RT-10E/RTI-1; Bendix TA-20A-1, TA-20B-1, TA-21 series except TA-21A-1, TG-19A-1, TG-19B; Collins 17L-8 series, Kaar TR-425A; King KG-300, Motorola or Lear 5639( ), 5640( ).

This license does not vest any right to operate the station nor any right in the use of frequencies designated beyond the terms hereof nor in any other manner than authorized herein; may not be assigned or otherwise transferred without approval from the Commission; and it is subject to the right of use or control by the United States conferred by Section 606 of the Communications Act.

Upon sale of a private aircraft and after application has been made for new license, this license constitutes special temporary authority for the purchaser to use private aircraft frequencies only for 30 days from the date of sale.

FEDERAL COMMUNICATIONS COMMISSION
Ben F. Waple
SECRETARY

NOT TRANSFERABLE

Cessna.
CESSNA AIRCRAFT CO

INSTRUCTIONAL SUPPLEMENT #1

EQUIPMENT LIST
MODEL 150L (1972)

WICHITA, KANSAS

NOTES

▷1 1. Suffix letter to item numbers:
  - -R = Required items of equipment for FAA certification
  - -S = standard equipment items
  - -O = optional equipment items replacing required or standard items
  - -A = optional equipment items which are in addition to required or standard items

2. Refer to the sheet titled "Weight & Balance and Installed Equipment Data" for a listing of equipment installed on your aircraft at the factory.

3. Unless otherwise indicated, true values (not net change values) for weight and arm are shown. Positive arms are distances aft of datum; negative arms are distances forward of datum (see weight and balance data sheet for datum location).

4. A separate FAA approval must be obtained if the following items are not installed per applicable Cessna drawings or accessory kit instructions.

* Complete assembly installations are indicated by asterisks after the item weight and arm. Some major components of the assembly are listed on the lines immediately following. The summation of these major components does not necessarily equal the complete assembly installation.

ITEM NO ▷1	DESCRIPTION	REF DRAWING	WT LBS	ARM INS
001-R	Engine, Continental 0-200-A, Spec 48 (Includes electrically engaging starter)	0450500	210.5	-17.5
002-R	Propeller Installation	C161001-0402	27.2*	-34.4*
	Propeller, McCauley Fixed Pitch	1A101/HCM6948	20.6	-35.0
	3.06 inch Prop Spacer Adaptor, McCauley	B-4351	4.4	-32.1
003-S	Spinner, Propeller	0450044	1.5*	-36.0*
	Spinner Dome	0450042-1	0.8	-37.8
	Aft Spinner Bulkhead	0450041-1	0.5	-33.6
	Forward Spinner Bulkhead	0450043-1	0.3	-36.4
004-R	Alternator, 60-Amp, 14-Volt	C611501-0203	11.5	- 6.5
005-R	Regulator, Alternator 60-Amp, 14-Volt	C611001-0101	1.0	- 1.5
006-R	Battery, 12-Volt, 24-Amp Hour	0511319	23.0	- 4.5
007-R	Filter, Carburetor Air (Air-Maze)	121614	0.5	-24.5
008-R	Heating System, Cabin & Carburetor Air	0450400	9.5	-21.0
010-R	Wheel, Brake & Tire Assy, 6.00 - 6 Main (2)	0441210-3	30.0*	47.0*
	Wheel Assy, McCauley (each)	C163002-0101	5.9	47.7
	Brake Assy, McCauley (left)	C163032-0101	1.8	43.7
	Brake Assy, McCauley (right)	C163032-0102	1.8	43.7
	Tire, 4-Ply Blackwall (each)	C262003-0101	6.1	47.1
	Tube (each)	C262023-0102	1.8	47.1

APPROVED
Cessna Aircraft Co. Commercial Div.
[illegible]

ISSUED: 13 July 1971
REVISED: 20 July 1971
APPROVED: Executive Engineer
Date 7-13-71
SHT 1 OF 7
FORM NO. 80-222

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INSTRUCTIONAL SUPPLEMENT #1

EQUIPMENT LIST (CONT'D)

MODEL 150L (1972)

CESSNA AIRCRAFT CO

WICHITA, KANSAS

ITEM NO ▷1	DESCRIPTION		REF DRAWING	WT LBS	ARM INS
011-R	Wheel & Tire Assy, 5.00 - 5 Nose		0442504-9	8.2*	-10.8*
	Wheel Assy, McCauley	(each)	C163002-0201	3.0	-10.8
	Tire, 4-Ply Blackwall	(each)	C262003-0102	4.0	-10.8
	Tube	(each)	C262023-0101	1.2	-10.8
012-0	Whitewall Tires (Replaces Blackwall Tires of Items 010-R & 011-R. Net wt. change)		0501005	0.0*	32.8*
	Main Tire, 4-Ply Whitewall	(each)	C262001-0101	6.1	47.1
	Nose Tire, 4-Ply Whitewall	(each)	C262001-0102	4.0	-10.8
020-R	Indicator, Airspeed		C661060-0101	0.5	18.0
020-0	Indicator, True Airspeed		0513236	1.0	18.0
021-R	Altimeter		C661012-0101	0.7	17.6
021-0	Altimeter, Sensitive		C661071-0101	1.0	17.6
021-0-1	Altimeter, Sensitive (Feet & Millibars)		C661071-0102	1.0	17.6
022-R	Indicator, Stall Warning Audible		0413029	0.5	21.5
023-R	Ammeter		S-1320-1	0.5	18.0
024-R	Compass		C660501-0101	0.5	20.0
025-R	Tachometer Installation, Engine			1.0*	12.5*
	Recording Tach Indicator		C668020-0101	0.6	17.0
	Tach Flexible Shaft		S-1605-3	0.3	2.0
026-R	Instrument Cluster		C669504-0104	0.5	18.0
027-R	Instrument Cluster		C669505-0103	0.5	18.0
030-R	Seat Installation, Pilot & Copilot Bench		0415000	15.3*	43.6*
	Two-Place Bench Seat Upper Cushion		0400119-1	6.9	51.0
	Two Lower Seat Cushions		0411205-1,2	7.8	36.4
	4 Attach Brackets, Screws, Nuts		0415000	0.5	53.4
030-0	Seat Inst., Pilot & Copilot Indiv. Sliding		0410220-8	24.5*	44.0*
	Two Individual Sliding Seats		0414033-1	22.0	44.6
	4 Seat Rails, Stiffeners, Screws & Nuts		0410230	2.5	38.6
031-R	Belt Assy, Pilot Lap		S-2070-104	1.0	39.0
032-S	Shoulder Harness Assy, Pilot		S -2070-202	1.0	39.0
033-S	Belt & Shoulder Harness Assy, Copilot Lap		S-2070-4	2.0	39.0
034-S	Baggage Net		2015009-2	0.5	84.0
036-S	Paint, Standard Stripe (8767.5 in^2)		0404015-1	1.3	66.9
036-0	Paint, Optional Overall Exterior		0404016 -1	8.2*	76.4*
	Overall White Base (74600 in^2)			6.6	79.0
	Colored Stripe (11967.5 in^2)			1.7	66.1
037-R	Operational Limitation Placard - VFR		1205001-66	0.0	23.0
037-0	Operational Limitation Placard - IFR (requires gyros & Nav-Com radio)		1205001-65	0.0	23.0

ISSUED: 13 July 71	REVISED:	SHT 2 OF 7

FORM NO. 80-223

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INSTRUCTIONAL SUPPLEMENT #1

CESSNA AIRCRAFT CO

EQUIPMENT LIST (CONT'D)
MODEL 150L (1972)

WICHITA, KANSAS

ITEM NO ▷1	DESCRIPTION	REF DRAWING	WT LBS	ARM INS
200-A	Cables, Corrosion Resistant Control (Net Change)	0400027	0.0	--
201-A	Clock Installation	0400323	0.4*	14.4*
	Clock, Electric	C664508-0101	0.3	18.1
202-A	Controls, Dual (Wheel, Pedals, and Toe Brakes)	0460118-7	3.5	12.9
203-A	Corrosion Proofing, Internal	0400027-2	4.5	68.0
204-A	Fairings Installation, Wheel (Set of 3)	0501015-3	18.0*	35.3*
	Nose Wheel Fairing	0543065-1	4.1	-9.5
	Main Wheel Fairing (each)	0541203	5.9	49.5
205-A	Filter Installation, Full Flow Engine Oil	0450405-2	4.5*	-6.0*
	Adapter Assembly	0450404-2	1.1	-8.0
	Filter Element Kit	C294505-0102	0.3	-5.7
206-A	Fire Extinguisher, Hand Type	0401001	3.0	9.5
207-A	Gage, Outside Air Temp	C668507-0101	0.1	22.0
208-A	Ground Service Plug Receptacle	0470009-1	2.0	-2.0
209-A	Gyro Inst. (Requires Item 253-A Vacuum Sys)	0413466-1	6.5*	14.5*
	Directional Gryo, Std. Prec.SP-7610-5-CES	C661075-0102	2.2	16.6
	Alternate: R. C. Allen	C661075-0103		
	Garwin	C661075-0104		
	A.I.M.	C661075-0101		
	Horizon Gyro, Std. Prec. SP-7710-5-CES	C661076-0104	2.5	16.3
	Alternate: R. C. Allen	C661076-0102		
	Garwin	C661076-0101		
	A.I.M.	C661076-0103		
	Hoses, Fittings, Screws	0413466	1.4	9.0
220-A	Heating System, Pitot	0422355-1	0.6	21.5
221-A	Hoisting Rings, Aircraft Cabin Top	0541115	2.0	42.0
222-A	Hook, Glider Tow (Installed)	0500228	0.5	200.0
	(Stowed)		0.5	84.0
223-A	Indicator, Rate of Climb	C661080-0101	1.0	18.0
224-A	Indicator, Turn Coordinator	C661003-0504	1.3	17.2
225-A	Indicator, Turn Coordinator (Used with item 402-A Wing Leveler)	0400332 604-200-200	3.0	16.5
226-A	Indicator, Turn & Bank	S-1413N2	2.0	16.5
227-A	Holder, Cup (Retractable)	0401006	0.1	17.2
230-A	Light Installation, Control Wheel Map	0470117-3	0.2	22.5
231-A	Light Installation, Cowl Mounted Landing	0401003-2	1.4	-21.9
232-A	Light Installation, Omniflash Beacon	0431013-1	1.2*	173.4*
	Beacon Light In Fin Tip	C621001-0113	0.4	210.9
	Flasher Power Supply In Aft Tailcone	C594501-0203	0.7	176.7
233-A	Light Installation, Wing Tip Strobe	0401002-1	4.5*	82.5*
	Strobe Lights in Wing Tips (Set of 2)	C622003-0101	0.2	35.5
	Flasher Power Supply	C622004-0103	3.1	101.0
234-A	Lighter, Cigarette	0513052-16	0.1	18.0
235-A	Mirror, Rear View	0500312-4	0.3	17.0
236-A	Recorder, Engine Hour Meter	0400334-2	0.8	12.2

ISSUED: 13 July 1971	REVISED:	SHT 3 OF 7

FORM NO. 80-223

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Cessna.

CESSNA AIRCRAFT CO

INSTRUCTIONAL SUPPLEMENT #1
EQUIPMENT LIST (CONT'D)
MODEL 150L (1972)

WICHITA, KANSAS

ITEM NO 1	DESCRIPTION	REF DRAWING	WT LBS	ARM INS
237-A	Seat Installation, Auxiliary	0400134-1	10.5*	66.5*
	Upper Back Rest Cushion	0711080-1	1.3	72.9
	Lower Seat Cushion Assembly	0400136-6	6.4	64.5
	Lap Belt Assembly	S-1746-2	1.0	66.0
238-A	Shelf Installation, Utility	0412072-4	1.0	89.0
239-A	Steps and Handles, Refueling Assist	0413456-2	2.1	9.9
250-A	Sun Visors (Set of 2)	0413473-1	1.0	27.0
251-A	Tow Bar, Aircraft Nose Wheel (Stowed)	0501019-1	1.6	84.0
252-A	Upholstery, Commuter Interior (Net Change)	0415000	4.5	29.0
253-A	Vacuum System Installation, Engine Driven	0413466-1	5.7*	-17.0*
	Dry Vacuum Pump, Airborne 200CC-9	C431002-0103	3.6	-26.4
	Filter Assembly	C294501-0101	0.5	2.0
	Vacuum Gauge	C668542-0101	0.4	17.6
	Vacuum Relief Valve, Airborne 133A14	C482001-0401	0.5	1.9
254-A	Valve, Engine Oil Quick Drain (Net Change)	1701015-4	0.0	-13.5
255-A	Valves, Wing Fuel Tank Drain (Net Change)	0526001	0.0	55.6
256-A	Windows, Overhead Cabin Top (Net Increase)	0413492-6	0.5	49.0
257-A	Windows, Tinted (Set of 4, Net Change)	0400324-1	0.0	--
258-A	Wing Leveler Provisions (for complete installation see Item 402 group)	0400332	5.5*	60.0*
	Aileron Actuator Servos (Set of 2)	1005-1-0	1.3	63.0
	Rudder Actuator Servos (Set of 2)	1005-0-1	1.3	98.6
	Tubing	S-1071-3	2.0	
	Miscellaneous Parts	0400332	3.2	
270-A	Wing Tips, Modified Conical (Net Change)	0523565	2.5	41.0
271-A	Wings with 38 Gallon Capacity Extended Range Fuel Tanks (Set of 2, Net Change)	0426008	5.0	41.0
272-A	Winterization Kit Installation, Engine	0450105-2	1.2*	-22.0*
	Cover Plates, Fwd Cowl (Set of 2 installed)	0450409	0.3	-32.0
	Cover Plates, Fwd Cowl (Set of 2 stowed)	0450409	0.3	84.0
	Crankcase Breather Tube Insulation	0456004	0.3	-20.1

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CESSNA AIRCRAFT CO

EQUIPMENT LIST (CONT'D)
MODEL 150L (1972)

WICHITA, KANSAS

ITEM NO ▷1	DESCRIPTION	REF DRAWING	WT LBS	ARM INS	
400-A	Trainer Equipment Kit Consists of Items:	0400150	9.4*	10.9*	
	021-0 Sensitive Altimeter (Exchange)	C661012-0101	0.3	19.6	
	210-A Clock Installation	C664508-0101	0.4	14.4	
	202-A Dual Controls, Wheels & Pedals	0460115-7	3.5	12.9	
	207-A Outside Air Temperature Gauge	C668507-0101	0.1	22.0	
	223-A Rate-of-Climb Indicator	C661080-0101	1.0	18.0	
	224-A Turn Coordinator	C661003-0504	1.3	17.2	
	231-A Landing Light, Cowl-Mounted	0401003	1.4	-21.9	
	234-A Cigarette Lighter	0513052	0.1	18.0	
	235-A Rear View Mirror	0500312	0.3	17.0	
	250-A Sun Visors (Set of 2)	0413473	1.0	27.0	
	(Cessna 300 Nav/Com 100 Channel Radio & Associated Installation Items are required by, but not included in, the trainer equipment kit weight.)				
401-A	Commuter Equipment Kit Consists of Items:	0400150	58.5*	29.0*	
	030-S Two-Place Bench Seat (Deleted)	0415000	-15.3	43.6	
	030-0 Two Individual Sliding Seats	0410220	24.5	44.0	
	204-A Wheel Fairings (Set of 3)	0501015-3	18.0	35.3	
	209-A Gyros, Horizon & Directional	0413466	6.5	14.5	
	220-A Heated Pitot (Net Change)	0422355	0.6	21.5	
	232-A Omni Flash Beacon Light	0431018	1.2	173.4	
	251-A Tow Bar, Aircraft Nose Wheel	0501019-1	1.6	84.0	
	252-A Commuter Upholstery (Net Change)	0415000	3.8	24.1	
	253-A Vacuum System Engine-Driven	0413466	5.7	-17.0	
	270-A Conical Wing Tips (Net Change)	0523565	2.5	41.0	
	400-A Trainer Equipment Kit	0400150	9.4	10.9	
	034-0 Overall Exterior Paint (This item is required by, but not included in, the Commuter Equipment Kit Weight.)				
402-A	Wing Leveler Installation	0400332-2	14.2*	19.9*	
	225-A Turn Coordinator	604-200-200	3.0	16.5	
	253-A Vacuum System	0413466-1	5.7	-17.0	
	258-A Wing Leveler Components	0400332	5.5	60.0	
402-A-1	Wing Leveler Installation (Applicable to Aircraft with Turn Coordinator & Vacuum System installed)	0400332-1	7.2*	49.6*	
	224-A Turn Coordinator (Deleted)	C661003-0504	- 1.3	17.2	
	225-A Turn Coordinator	604-200-200	3.0	16.5	
	258-A Wing Leveler Components	0400332	5.5	60.0	
500-A	Electronic Option Nav-Com Provisions	0470400	3.9*	79.4*	A
	520-A VHF Com 360 Ch. Antenna Instl.	0470400-616	0.8	41.9	
	522-A VOR Nav Antenna Instl.	0470400-610	1.4	153.3	
	525-A Hand-Held Microphone Instl.	0470400-720	0.6	18.7	
	530-A Radio Light Dimming Rheostat Instl.	0470400-724	0.0	20.0	
	531-A Cabin Speaker Instl.	0470400-726	1.0	52.4	
	Fuse Cap and Holder	S1091-15	0.0	18.0	
501-A	Electronic Option Right VHF Ant. Inst.	0470400-619	0.8	41.9	A
502-A	Electronic Option Headset Installation	0470400-	0.2	14.0	A
503-A	Electronic Option ADF Ant. Provisions	0470400-37	1.8	18.7	A

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INSTRUCTIONAL SUPPLEMENT #1

Cessna

EQUIPMENT LIST (CONT'D)

MODEL 150L (1972)

CESSNA AIRCRAFT CO WICHITA, KANSAS

ITEM NO 1▷	DESCRIPTION	REF DRAWING	WT LBS	ARM INS
520-A	Antenna Inst., VHF Com 360 Channel	0470400-616	0.8	41.9
521-A	Antenna Inst., VHF Com Steel Rod	0470400-601	0.5	37.0
522-A	Antenna Inst., VOR Nav	0470400-610	1.4	153.3
523-A	Audio Isolation Amplifier (KA-25C)	0470400-712	1.5	8.8
524-A	Headset Installation (C596501-0104)	0470400-	0.2	14.0
525-A	Microphone Instl., Hand-Held	0470400-720	0.6	18.7
526-A	Microphone Instl., Overhead Mtd. Boom	0401005	1.0	31.5
527-A	Radio Cooling System (Each Radio)	0470400	0.2	13.0
528-A	Radio Mounting Rack for Remote Units	0411547	0.5	100.0
529-A	Radio Selector Switches and Relay	0470400	0.5	15.0
530-A	Rheostat Instl., Radio Light Dimming	0470400-724	0.0	20.0
531-A	Speaker Instl., Cabin (C596504-0201)	0470400-726	1.0	52.4
532-A	Tee Inst., VOR Antenna Cable	0470400-217	0.2	1.0
550-A	Cessna 300 ADF (521B or 521B-1)	0470400-11,-13	9.5*	19.0*
	R-521B Receiver or	35700-1000	4.3	15.5
	R-521B-1 Receiver with BFO	39300-1000	4.3	15.5
	M-521B Mounting Box	29277-0000	0.6	15.5
	IN-521B Indicator, Fixed Card	32680-0003	1.1	17.0
	L-521B Antenna, Fixed Loop	32880-0100	1.4	24.2
	Sense Antenna Instl.	0470400-606	0.2	119.0
551-A	Cessna 300 Marker Beacon (502B)	0470400-28	2.2*	29.4*
	R-502B Receiver	31240-0014	1.0	1.0
	Antenna, "L" Shaped Rod	0770681-1	0.4	94.0
552-A	Cessna 300 Nav-Com 100 Channel (508A)	0470400	9.0*	13.8*
	RT-508A Receiver Transmitter	39360-1014	6.7	13.6
	Mounting Box	40550	0.8	12.2
	IN-514R VOR Indicator	31640-0000	0.7	17.8
553-A	Cessna 300 Nav-Com 360 Ch.(528A & IN-514R)	0470400-	9.4*	13.8*
	RT-528A Receiver Transmitter	39380-1014	7.1	13.6
	Mounting Box	40550	0.8	12.2
	IN-514R VOR/LOC Indicator	31640-0000	0.7	17.8
554-A	Cessna 300 Nav-Com 360 Ch.(528A & IN-525A)	0470400-	9.7*	13.8*
	RT-528A Receiver Transmitter	39380-1014	7.1	13.6
	Mounting Box	40550	0.8	12.2
	IN-525A VOR/ILS Indicator	32350-0000	1.0	17.8
555-A	Cessna 300 VHF Transceiver (524A)	0470400-314	7.8*	12.8*
	RT-524A Transceiver	31390-1514	6.6	12.5
	M-514R Mounting Box	30420-0000	0.7	12.5
556-A	Cessna 300 Transponder (KT-75R)	0470400-68	9.1*	79.1*
	KFS-575 Panel Control 071-1038-00	C589503-0101	0.7	16.5
	KT-75R Remote Receiver 066-1020-00	C589504-0101	5.8	101.0
	KA-28 Antenna 071-1036-00	C589505-0101	0.1	70.0
557-A	Cessna 400 Glideslope (543B)	0470400-62	5.0*	82.5*
	R-543B Receiver	36440-0000	2.7	100.0
	Mounting, Rigid	36450-0000	0.3	100.0
	Antenna	1200098-2	0.2	23.2

ISSUED: 13 July 1971	REVISED:	SHT 6 OF 7

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INSTRUCTIONAL SUPPLEMENT #1

Cessna.

CESSNA AIRCRAFT CO

EQUIPMENT LIST (CONT'D)

MODEL 150L (1972)

WICHITA, KANSAS

INSTRUCTIONS FOR USING RADIO EQUIPMENT LISTINGS:

Complete radio installations require certain supporting equipment in addition to the individual radio items listed. The following installation examples and notes should be used as a guide in the determination of complete installations.

ITEM NO ▷1	DESCRIPTION	REF DRAWING	WT LBS	ARM INS
1.	First Unit Cessna 300 Nav-Com 360 Channel with VOR/ILS Indicator Complete Installation. Consists of Items:		13.5*	33.0*
554-A	Cessna 300 Nav-Com 360 Ch.(528A & IN-525A)		9.7	13.8
520-A	Antenna Inst, VHF Com 360 Channel		0.8	41.9
522-A	Antenna Inst, VOR NAV		1.4	153.3
525-A	Microphone Inst, Hand Held		0.6	18.7
530-A	Rheostat Inst, Radio Light Dimming		0.0	20.0
531-A	Speaker Inst, Cabin		1.0	52.4
2.	Second Unit Cessna 300 Nav-Com 100 Channel with VOR Indicator Complete Installation. Consists of Items:		10.5*	15.8*
552-A	Cessna 300 Nav-Com 100 Ch. (508A)		9.0	13.8
520-A	Antenna Inst, VHF Com 360 Channel		0.8	41.9
529-A	Radio Selector Switches and Relay		0.5	15.0
532-A	Tee Inst, VOR Antenna Cable		0.2	1.0
3.	Second Unit Cessna 300 ADF with BFO Complete Installation Consists of Items:		10.0*	18.8*
550-A	Cessna 300 ADF (521B-1)		9.5	19.0
529-A	Radio Selector Switches and Relay		0.5	15.0
4.	Third Unit Cessna 300 Marker Beacon Receiver Complete Installation. Consists of Item 551-A Only		2.2	29.4
5.	Fourth Unit Cessna 400 Glideslope Receiver Complete Installation. Consists of Items:		5.5*	84.1*
557-A	Cessna 400 Glideslope (543B)		5.0	82.5
528-A	Radio Mounting Rack for Remote Units		0.5	100.0

NOTES:

1. Item 523-A (KA-25C Audio Isolation Amplifier) is required for all multiple radio installations not incorporating a "Cessna Crafted" VHF or HF.

2. Installations with aft mounted units require Item 528-A (radio mounting rack for remote units) be installed with first aft mounted unit. Example: Item 556-A (Cessna 300 Transponder) and Item 557-A (Cessna 400 Glideslope).

3. Installations with panel mounted transmitters with vacuum tubes require Item 527-A (Radio Cooling System). Example: Item 555-A (Cessna 300 VHF Transceiver, ARC 524A)

4. Installations without panel mounted transmitters with vacuum tubes do not require Item 527-A (radio cooling system). Example: Item 550-A (Cessna ADF, ARC 521B); Item 552-A (Cessna 300 Nav-Com 100 Channel, ARC 508A); Items 553-A and 554-A (Cessna Nav-Com 360 Channel, ARC 528A).

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FORM NO. 80-223

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INSTRUCTIONAL SUPPLEMENT #1

CESSNA AIRCRAFT COMPANY

WICHITA, KANSAS

Weight & Balance and Installed Equipment Data

CONTROL NUMBER	DATE	MODEL	REGISTRATION NUMBER	CESSNA SERIAL NUMBER
[illegible]0501	[illegible]/20/71	150 COMMUTER	N1611Q	15072911

ITEM	WEIGHT	ARM	MOMENT
STANDARD AIRPLANE (EMPTY,DRY,UNPAINTED) COMPUTED	987.4	32.9	32485
INCLUDES EQUIPMENT ITEMS REQUIRED FOR FAA CERTIFICATION			
UNUSABLE FUEL 3.5 GALLONS	21.0	40.0	840
ALL V[illegible] 207V VALOR RED/VES WHT	8.2	76.4	626
INT[illegible] TAHITIAN RED VINYL/RED NEGL.			
[illegible] NAV/COM 360CH W/VOR/LOC EXCH RT528A	13.2	33.4	441
RECORDER FLIGHT HOUR	.8	12.2	10
VALVE OIL QUICK DRAIN NEGL.			
[illegible] 150 COMMUTER	58.5	29.0	1697
LICENSED EMPTY WEIGHT	~~1089.1~~	~~33.1~~	~~36075~~
[illegible] WEIGHT 1600.0 LICENSED WEIGHT 1089.1 USEFUL LOAD	~~510.9~~		
Superseded 5/3/74			
~~WITH WHEEL FAIRINGS REMOVED FOR WINTERIZATION;~~ ~~NEW EMPTY WEIGHT 1073.2~~ ~~NEW MOMENT 35374~~ ~~NEW USEFUL LOAD 526.8~~			
Elt Antenna	.2	98.0	19.6
Narco ELT-10 Transmitter	3.5	103.0	360.5
Gross WT. 1600 Licensed WT. 1092.8 Useful load 507.2 #			
	1092.8	33.3	36479.1

With Wheel Fairings removed for winter operation

New Empty Weight	1076.9
New Empty Weight CG	33.3
New Moment	35933.95
New Useful Load	523.1

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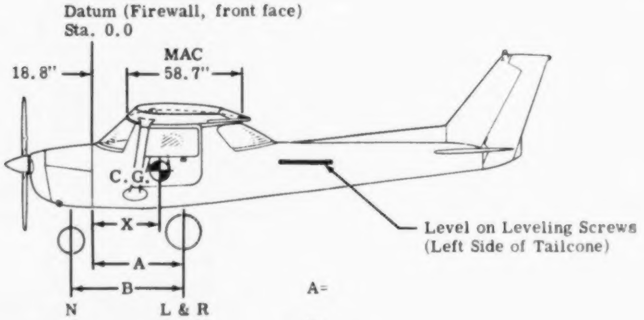
INSTRUCTIONAL SUPPLEMENT #1

Weighing Procedure

MODEL 150L

1972



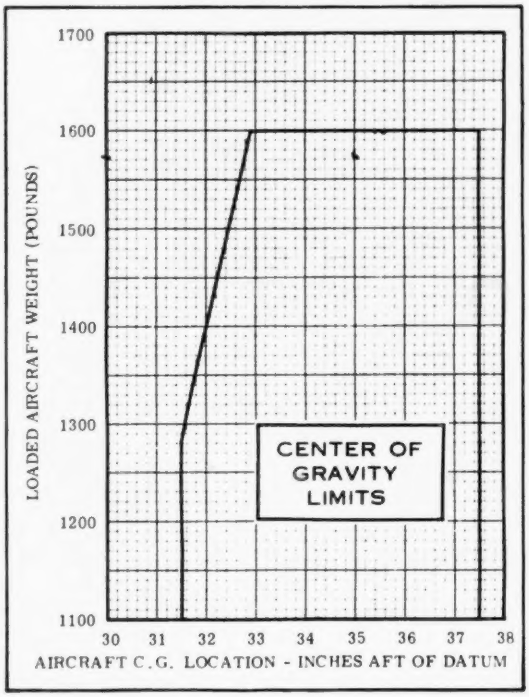
A=

B=

Scale Position	Scale Reading	Tare	Symbol	Net Weight
Left Wheel			L	
Right Wheel			R	
Nose Wheel			N	
Aircraft Empty Weight (As Weighed)			W	

$$X = \text{ARM} = (A) - \frac{(N) \times (B)}{W} \; ; \; X = (\qquad) - \frac{(\qquad) \times (\qquad)}{(\qquad)} = (\qquad) \text{ IN.}$$

1. Preparation:
   a. Inflate tires to recommended operating pressures.
   b. Remove each wing tank drain plug to remove all fuel.
   c. Remove oil sump drain plug to drain all oil.
   d. When individual front seats are installed, place seats in most forward position with seat backs in most nearly vertical position.
   e. Put flaps in fully retracted position.
   f. Place all control surfaces in neutral position.
2. Leveling:
   a. Place scales under each wheel (500# min. capacity for scales).
   b. Deflate nose tire to center bubble on level (see Diagram).
3. Weighing:
   a. With the airplane level and brakes released, record the weight shown on each scale. Deduct the tare, if any, from each reading.
4. Measuring:
   a. Obtain measurement "A" by measuring horizontallly (along the airplane center line) from a line stretched between the main wheel centers to a plumb bob dropped from the firewall.
   b. Obtain measurement "B" by measuring horizontally and parallel to the airplane center line, from center of nose wheel axle, left side, to a plumb bob dropped from the line between the main wheel centers. Repeat on right side and average the measurements.
5. Completing the Form:
   a. Using weights from (3) and measurements from (4) the airplane weight and C.G. can be determined.
   b. Obtain licensed empty weight by adding weight and moment of unusable fuel to airplane empty weight and moment. There are 3.5 gallons of unusable fuel (weight = 21#, moment = 840 lb ins.) in airplanes with the standard 26 gallon capacity fuel system and 3.0 gallons of unusable fuel (weight = 18#, moment = 720 lb ins.) in aircraft with the optional 38 gallon capacity fuel system.



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Form Issue Date: 1 July 1971

INSTRUCTIONAL SUPPLEMENT #1

CESSNA AIRCRAFT COMPANY
WICHITA, KANSAS

MODEL 150L

1972

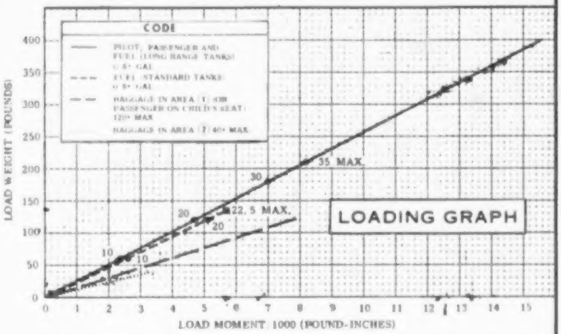
Loading and Center of Gravity Charts

IT IS THE RESPONSIBILITY OF THE PILOT AND AIRCRAFT OWNER TO ENSURE THAT THE AIRCRAFT IS LOADED PROPERLY.

When computing aircraft loading requirements, refer to the Weight and Balance and Installed Equipment Data sheet in the aircraft file for the licensed empty weight, arm and moment of the aircraft as delivered from the factory. (If alterations have been made to the aircraft, refer to form FAA 337 for the latest empty weight, arm and moment.) The aircraft weight and balance may then be determined using the Loading Graph and Center of Gravity Moment Envelope as indicated in the Sample Loading Problem below.

SAMPLE LOADING PROBLEM	SAMPLE AIRPLANE		YOUR AIRPLANE	
	Weight (lbs.)	Moment (lb.-ins. /1000)	Weight (lbs.)	Moment (lb.-ins. /1000)
1. Licensed Empty Weight (Sample Airplane)	1069	34.9		
2. Oil (6 qts. - Full oil may be assumed for all flights)	11	-0.1	11	-0.1
3. Fuel (Standard - 22.5 gal at 6 lbs./gallon)	135	5.7		
Fuel (Long Range - 35 gal. at 6 lbs./gallon)				
4. Pilot and Passenger (Sta. 35 to 41)	340	13.3		
5. Baggage - Area 1 (or passenger on child's seat) (Sta. 50 to 76)	45	2.9		
6. Baggage - Area 2 (Sta. 76 to 94)				
7. TOTAL WEIGHT AND MOMENT	1600	56.7		

8. Locate this point (1600 at 56.7) on the center of gravity moment envelope, and since this point falls within the envelope, the loading is acceptable.



NOTES (1) Line representing adjustable seats shows the pilot or passenger center of gravity on adjustable seats positioned for an average occupant. Refer to the Loading Arrangements Diagram for forward and aft limits of occupant c.g. range.

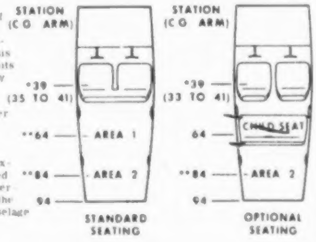
(2) Engine Oil: 6 Qts. = 11 lbs. at -0.1 Moment/1000.

LOADING ARRANGEMENTS

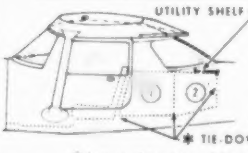
* Pilot or passenger center of gravity on adjustable seats positioned for average occupant. Numbers in parenthesis indicate forward and aft limits of occupant center of gravity range.

** Arms measured to the center of the areas shown.

NOTE
The aft baggage wall (approximate station 94) can be used as a convenient interior reference point for determining the location of baggage area fuselage stations.



BAGGAGE LOADING AND TIE-DOWN



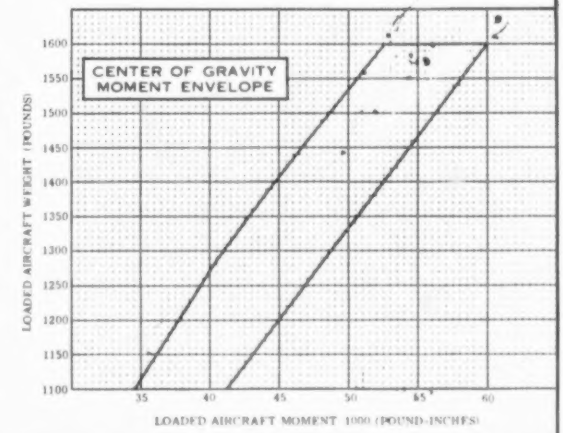
BAGGAGE AREA
MAXIMUM ALLOWABLE LOADS

AREA ① = 120 POUNDS
AREA ② = 40 POUNDS
AREAS ① + ② = 120 POUNDS

✱ TIE-DOWN NET ATTACH POINTS

✱ A cargo tie-down net is provided to secure baggage in the baggage area. The net attaches to six tie-down rings. Two rings are located on the floor just aft of the seat backs and one ring is located two inches above the floor on each cabin wall at the aft end of area ①. Two additional rings are located at the top, aft end of area ②. At least four rings should be used to restrain the maximum baggage load of 120#.

If the airplane is equipped with an optional utility shelf, it should be removed prior to loading and tying down large baggage items. (Slide the tab of the locking clips on each end of the shelf to disengage the shelf from the aircraft structure.) After baggage is loaded and secured, either stow the shelf or, if space permits, install it for storing small articles.



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Form Issue Date: 1 July 1971

INSTRUCTIONAL SUPPLEMENT #1

DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

MAJOR REPAIR AND ALTERATION
(Airframe, Powerplant, Propeller, or Appliance)

Form Approved
Budget Bureau No. 04-R060.1

FOR FAA USE ONLY

OFFICE IDENTIFICATION

INSTRUCTIONS: Print or type all entries. See FAR 43.9, FAR 43 Appendix B, and AC 43.9-1 (or subsequent revision thereof) for instructions and disposition of this form.

1. AIRCRAFT	MAKE Cessna	MODEL 150 L
	SERIAL NO. 15072911	NATIONALITY AND REGISTRATION MARK N-1611 Q
2. OWNER	NAME (*As shown on registration certificate*) Skyline Motors Aviation Services Inc.	ADDRESS (*As shown on registration certificate*) W.15th St. Beaver Falls, Penna. 1501

3. FOR FAA USE ONLY

4. UNIT IDENTIFICATION — 5. TYPE

UNIT	MAKE	MODEL	SERIAL NO.	REPAIR	ALTERATION
AIRFRAME	•••••••••••••••••••••• (As described in item 1 above) ••••••••••••••••••••••				X
POWERPLANT					
PROPELLER					
APPLIANCE	TYPE MANUFACTURER				

6. CONFORMITY STATEMENT

A. AGENCY'S NAME AND ADDRESS	B. KIND OF AGENCY	C. CERTIFICATE NO.
Donald E. Baker 49 Cherry St. Meadville, Penna. 16335	X U.S. CERTIFICATED MECHANIC ☐ FOREIGN CERTIFICATED MECHANIC ☐ CERTIFICATED REPAIR STATION ☐ MANUFACTURER	A&P 1435779

D. I certify that the repair and/or alteration made to the unit(s) identified in item 4 above and described on the reverse or attachments hereto have been made in accordance with the requirements of Part 43 of the U.S. Federal Aviation Regulations and that the information furnished herein is true and correct to the best of my knowledge.

DATE May 3,1974	SIGNATURE OF AUTHORIZED INDIVIDUAL Donald E. Baker

7. APPROVAL FOR RETURN TO SERVICE

Pursuant to the authority given persons specified below, the unit identified in item 4 was inspected in the manner prescribed by the Administrator of the Federal Aviation Administration and is ☒ APPROVED ☐ REJECTED

BY	☐	FAA FLT. STANDARDS INSPECTOR	☐	MANUFACTURER	X	INSPECTION AUTHORIZATION	OTHER (*Specify*)
	☐	FAA DESIGNEE	☐	REPAIR STATION	☐	CANADIAN DEPARTMENT OF TRANSPORT INSPECTOR OF AIRCRAFT	

DATE OF APPROVAL OR REJECTION May 3,1974	CERTIFICATE OR DESIGNATION NO. A&P 1435779	SIGNATURE OF AUTHORIZED INDIVIDUAL Donald E. Baker

FAA Form 337 (7-67) (8320)

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NOTICE

Weight and balance or operating limitation changes shall be entered in the appropriate aircraft record. An alteration must be compatible with all previous alterations to assure continued conformity with the applicable airworthiness requirements.

8. DESCRIPTION OF WORK ACCOMPLISHED *(If more space is required, attach additional sheets. Identify with aircraft nationality and registration mark and date work completed.)*

Installed Narco ELT-10 transmitter at 103 inches aft of baggage area.

Transmitter installed as per manufacturers handbook and AC-43-13-2, Figure 2.8 Chapter 2,. Mounting base fabricated with 1 inch aluminium angle.

Antenna installed at 98 inches on top of fuselage in accordance with manufacturers handbook and AC-43-13-2, Chapter 3, Figure 3.1.

Interférence and operational check from other antennas. Found OK.

Weight & balance data revised to reflect this installation, Equipment list revised & logbook entries made.

The end.

☐ ADDITIONAL SHEETS ARE ATTACHED

U.S. G.P.O. 1977-723-694/545/1303

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G-S Aviation Service

1200 West 36 Street North
Tulsa, Oklahoma 74106

Downtown Airpark
918 425-3486

FAA APPROVED REPAIR STATION NO. 212-37

Customer ____________________ W.O. No. ____________

Qty. ________ Eng. Type ________ S/N ________________

Part Name ____________________ P/N ________________

Work done ____

By ____

Date ______________ Inspected by ________________

Serviceable Part

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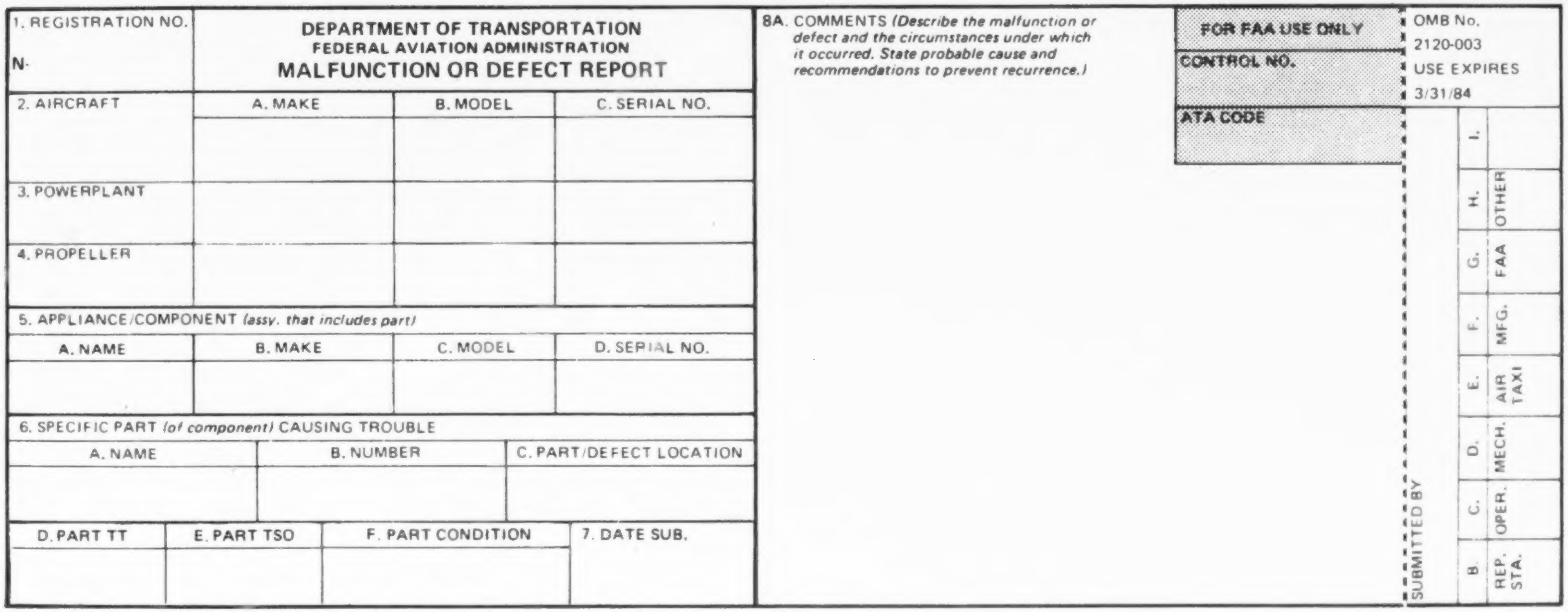
G103C-41

INSTRUCTIONAL SUPPLEMENT #1



1. REGISTRATION NO.

N-

DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
MALFUNCTION OR DEFECT REPORT

	A. MAKE	B. MODEL	C. SERIAL NO.
2. AIRCRAFT			
3. POWERPLANT			
4. PROPELLER			

5. APPLIANCE/COMPONENT *(assy. that includes part)*

A. NAME	B. MAKE	C. MODEL	D. SERIAL NO.

6. SPECIFIC PART *(of component)* CAUSING TROUBLE

A. NAME	B. NUMBER	C. PART/DEFECT LOCATION

D. PART TT	E. PART TSO	F. PART CONDITION	7. DATE SUB.

8A. COMMENTS *(Describe the malfunction or defect and the circumstances under which it occurred. State probable cause and recommendations to prevent recurrence.)*

FOR FAA USE ONLY
CONTROL NO.
ATA CODE

OMB No.
2120-003
USE EXPIRES
3/31/84

SUBMITTED BY

B.	REP. STA.
C.	OPER.
D.	MECH.
E.	AIR TAXI
F.	MFG.
G.	FAA
H.	OTHER
I.	

FAA Form 8010-4(5-81) SUPERSEDES PREVIOUS EDITIONS

TECHNICAL INFORMATION SUPPLEMENT #1--Terms and Definitions

A. Time in service--In relation to maintenance records, time from the moment an aircraft leaves the surface of the earth until it touches the surface of the earth at the next point of landing

B. Airframe maintenance record--Any applicable form used to record aircraft maintenance

C. Engine maintenance record--Any applicable form used to record aircraft engine maintenance

D. Airworthiness certificate--Certificate issued by the FAA to all aircraft which have met minimum standards required for certification applicable to FAR Part 21

E. Equipment list--List of required and optional equipment installed on an aircraft

F. Weight-and-balance record--Record that shows appropriate combination of weight and center of gravity within range of landing conditions for which certification is requested (applicable to FAR Part 21); these records must be carried in the aircraft

G. Registration certificate--Document in aircraft which contains name and address of person(s) to whom aircraft is registered (applicable to FAR Part 47)

H. Flight manual--Approved information which must be carried in an aircraft; pertains to operational limitations, equipment list, and other information that is vital to pilot for safe flight of that aircraft

I. Radio transmitter license--Authorization document issued by Federal Communication Commission to register and operate an aircraft transmitter; must be carried in aircraft

J. ELT battery due date--Maximum use of (life-limited part) battery before replacement or recharging in accordance to FAR Part 91.52

K. Repairs and alterations form--Complete documentation of data and details (according to FAR Part 43) of any major repairs or major alterations performed on an aircraft

L. Markings and placards--Notice placed in or on aircraft depicting pertinent information relating to the aircraft, its operation, and particular component limitations relative to legality and safety of operation

M. Life-limited part--Part or component that has a designated number of hours, cycles of operation, or calendar time set forth by appropriate documentation applicable to FAR approval

N. Airworthy parts tag--Tag used by certificated repair stations to document conditions of parts and appliances

O. Recurring AD--Airworthiness directive that requires compliance at regular hourly or calendar time periods

P. Approved for return-to-service--Mechanic or other authorized person making required maintenance documentation (according to the applicable FARs) for returning an aircraft or appliance to service

TECHNICAL INFORMATION SUPPLEMENT #2--Aircraft Record File

The aircraft owner or operator is responsible for maintaining the aircraft record file. However, the maintenance technician is responsible for the documentation of any maintenance or inspection he or she performs. Every entry a maintenance technician makes in the aircraft record file must be signed and dated. A typical aircraft record file contains the following items:

A. Registration certificate--Gives evidence that the aircraft is listed in the FAA registry and documents the person's name and address to whom the aircraft is registered

(NOTE: FARs require that the owner or operator of an aircraft is responsible for the maintenance of an aircraft; therefore, the aircraft owner's name and address is listed on the registration certificate.)

B. Airworthiness certificate--Issued by the FAA that this aircraft has met the minimum standards required for certification applicable to FAR Part 21 and can be used to refer to aircraft specifications according to its categories in FAR Part 23

(NOTE: Any unapproved changes to the original aircraft type design invalidates the airworthiness certificate.)

C. Operation limitations or flight manual--Include the operating limits for powerplants, auxiliary systems, equipment lists, weight and balance, loading information, and other information that is vital to the pilot for safe flight operations

(NOTE: Most newer aircraft are required to have a flight manual. On some older types of aircraft the same information may be located in various places on the aircraft in the form of markings or placards. Type certificate data sheets state whether a flight manual or markings or placards are required to be in the aircraft.)

D. Radio transmitter license--Certificate issued by the Federal Communications Commission that registers the radio transmitters contained in the aircraft

(NOTE: The certificate is not transferable to the new owner when the aircraft is sold.)

E. Log books--Contain records of time in service and descriptions of all inspections, tests, repairs, and alterations of the aircraft, engine, propeller, and appliances

(NOTE: This is the part of the aircraft record file that is most used by the maintenance technician.)

F. Additional records--Information about the status of current airworthiness directives, major repair and alteration forms, a directory of life-limited parts with their replacement times, and emergency locator transmitter battery replacement date

GENERAL
G103 FUNDAMENTALS OF REGULATIONS, PUBLICATIONS, AND RECORDS
DOCUMENT AIRCRAFT RECORDS
G103-C

WORKBOOK SUPPLEMENT #1--Interpret FAR Parts 43 and 91, Requirements Related to Aircraft Record Files

As an aviation maintenance technician it is imperative that you be able to document aircraft records and that you have an understanding of the FARs that govern the documentation of aircraft inspections and repairs.

Using FAR Parts 43 and 91, Technical Supplement #2, and Technical Information Supplement #1, complete the following statements that relate to the aircraft record file. Write the correct answers in the blanks.

A. The registered ______________ or ______________ of an aircraft is responsible for the maintenance of the aircraft.

B. The four items in the aircraft record file that must be carried in the aircraft at all times are the ______________________ ____________, ______________________________, ________________, and ______________________

C. The form that identifies the category for which the aircraft operates within according to FAR Part 23 is the ______________________ ______________________________

D. The ______________________ is issued by the Federal Communications Commission and is not transferred when the aircraft is sold.

E. The weight and balance information will be found in the record file under the heading of ______________________________ or ____________________________.

F. If a flight manual is required to be a part of the record file it will be called for in the ______________________________ ____________________________.

G. Generally older aircraft have their operation limitations in the form of markings and placards; newer aircraft usually have ____________ ______________________________

GENERAL
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DOCUMENT AIRCRAFT RECORDS
G103-C

WORKBOOK SUPPLEMENT #2--Interpret FAR Part 43 Requirements Related to Inspection Record Entries

As an aviation maintenance technician you must be able to read and interpret the FARs. FAR Part 43 contains the Federal Aviation Regulations for maintenance, preventive maintenance, rebuilding, and alterations of certificated aircraft. Using FAR Part 43, complete the following statements. Write the correct answers in the blanks.

A. Whether it is provided by the manufacturer or is a mechanic's own design, a ________________________ is required when performing a 100-hour inspection.

B. FAR Part ________ gives the scope and detail of the 100-hour and annual inspection.

C. A maintenance record entry after the performance of a 100-hour, annual, or progressive inspection must contain the type of inspection, the ______________ of the inspection and the ______________________ of the person approving or disapproving the inspection.

D. If during an annual inspection unairworthy items are discovered, these items may be brought to the attention of the aircraft owner or operator. If the aircraft fails a 100-hour inspection, the person performing the inspection must ______________________________

____

____

E. If the aircraft is found to be airworthy and approved for return to service, a certification statement must be made in the aircraft records. An acceptable statement would be

____

____

____

____

F. If the aircraft is not approved for return to service because of needed maintenance, noncompliance with applicable specifications, airworthiness directives, or other approved data an acceptable certification statement would be ______________________________

____

____

G. For progressive inspections an acceptable certification statement would be ____

____

____

____

H. If an inspection is conducted under an inspection program provided for in Part 91, 123, 125, or 135.411 (a) (1), the entry must identify the ______________________, that part of the ____________________ accomplished and contain a statement that the inspection was performed in ____________________ with the inspections and procedures of that particular program.

I. If the person performing any inspection required by Part 91, 123, 125, or 135.411 (a) (1), finds that the aircraft is ______________ or does not meet the applicable _________________________________, or other ____________________ upon which its airworthiness depends, that person must give the owner or lessee a signed and dated

____

GENERAL
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DOCUMENT AIRCRAFT RECORDS
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WORKBOOK SUPPLEMENT #3--Perform Log Book Entries for Maintenance and Inspection

As an aviation maintenance technician you will be required to record in the aircraft log book a description of inspections, tests, repairs, and alterations. All entries must be endorsed with the name, rating, and certificate number of the mechanic or repair facility. During a 100-hour airframe and engine inspection on a 1979 Cessna 152, serial number 15280460, you found the following discrepancies. Use the following list and make individual log book entries indicating how the discrepancies were corrected.

DISCREPANCY LIST

A. Nose strut low on hydraulic fluid and air

B. Brake linings worn in left and right main wheels

C. Battery unserviceable as evidenced by hydrometer readings

D. Rotating beacon light out

E. Spark plug electrodes eroded

F. Make your last log book entry indicating that this same aircraft has successfully passed a 100-hour inspection

(NOTE: Total time in service: 1002.5)

WORKBOOK SUPPLEMENT #3

A.

AIRCRAFT LOG

DATE 19___	RECORDING TACH TIME	TODAYS FLIGHT	TOTAL TIME IN SERVICE	DESCRIPTION OF INSPECTIONS, TESTS, REPAIRS AND ALTERATIONS ENTRIES MUST BE ENDORSED WITH NAME, RATING AND CERTIFICATE NUMBER OF MECHANIC OR REPAIR FACILITY. (SEE BACK PAGES FOR OTHER SPECIFIC ENTRIES)

B.

AIRCRAFT LOG

DATE 19___	RECORDING TACH TIME	TODAYS FLIGHT	TOTAL TIME IN SERVICE	DESCRIPTION OF INSPECTIONS, TESTS, REPAIRS AND ALTERATIONS ENTRIES MUST BE ENDORSED WITH NAME, RATING AND CERTIFICATE NUMBER OF MECHANIC OR REPAIR FACILITY. (SEE BACK PAGES FOR OTHER SPECIFIC ENTRIES)

WORKBOOK SUPPLEMENT #3

C.

AIRCRAFT LOG

DATE 19___	RECORDING TACH TIME	TODAYS FLIGHT	TOTAL TIME IN SERVICE	DESCRIPTION OF INSPECTIONS, TESTS, REPAIRS AND ALTERATIONS ENTRIES MUST BE ENDORSED WITH NAME, RATING AND CERTIFICATE NUMBER OF MECHANIC OR REPAIR FACILITY. (SEE BACK PAGES FOR OTHER SPECIFIC ENTRIES)

D.

AIRCRAFT LOG

DATE 19___	RECORDING TACH TIME	TODAYS FLIGHT	TOTAL TIME IN SERVICE	DESCRIPTION OF INSPECTIONS, TESTS, REPAIRS AND ALTERATIONS ENTRIES MUST BE ENDORSED WITH NAME, RATING AND CERTIFICATE NUMBER OF MECHANIC OR REPAIR FACILITY. (SEE BACK PAGES FOR OTHER SPECIFIC ENTRIES)

E.

AIRCRAFT LOG

DATE 19___	RECORDING TACH TIME	TODAYS FLIGHT	TOTAL TIME IN SERVICE	DESCRIPTION OF INSPECTIONS, TESTS, REPAIRS AND ALTERATIONS ENTRIES MUST BE ENDORSED WITH NAME, RATING AND CERTIFICATE NUMBER OF MECHANIC OR REPAIR FACILITY. (SEE BACK PAGES FOR OTHER SPECIFIC ENTRIES)

F.

AIRCRAFT LOG

DATE 19___	RECORDING TACH TIME	TODAYS FLIGHT	TOTAL TIME IN SERVICE	DESCRIPTION OF INSPECTIONS, TESTS, REPAIRS AND ALTERATIONS ENTRIES MUST BE ENDORSED WITH NAME, RATING AND CERTIFICATE NUMBER OF MECHANIC OR REPAIR FACILITY. (SEE BACK PAGES FOR OTHER SPECIFIC ENTRIES)

WORKBOOK SUPPLEMENT #4--Interpret FAR Part 91 Applicable to Aircraft Airworthiness Directives

As an aviation maintenance technician you will be responsible for the documentation of compliance to airworthiness directives in the aircraft record file. FAR Part 91 sets forth the guidelines for this process. Therefore, you must be able to read and interpret FAR Part 91. Use FAR Part 91 to complete the following statements. Write the correct answers in the blanks.

A. FAR Part 91.173 requires that the maintenance records contain the current status of the airworthiness directives for that aircraft.

The entries must contain the type of ______________________, the

AD number, and the revision ________________________.

B. If an AD calls for action the ______________ and ______________

of when the next inspection is required must be included.

C. It is the responsibility of the ______________________________ to see that an AD note is followed.

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WORKBOOK SUPPLEMENT #5--Perform Maintenance Record Entries of Airworthiness Directives Compliance

An an aviation maintenance technician you will be responsible for maintenance record entries of AD compliance. Using the following AD and service letter, perform the correct entry documenting AD compliance.

A. Airworthiness Directive 78-25-07

78-25-07 CESSNA: Amendment 39-3371. Applies to Models A150M (Serial Numbers A1500654 through A1500734) and A152 (Serial Numbers A1520735 through A1520833) airplanes.

COMPLIANCE: Required as indicated, unless already accomplished

To assure necessary structural integrity of the vertical fin attachment to the airplane, in accordance with the instructions contained in Cessna Single Engine Service Letter SE78-62, dated October 13, 1978, or later revisions, within the next 25 hours time-in-service after the effective date of this AD, accomplish the following:

A) Replace the two existing Part Number 0431009-3 vertical fin attach brackets with two new Part Number 0431009-3 attach brackets obtained from Cessna.

B) Return the two brackets removed from each airplane to the Cessna factory for metallurgical examination.

C) Any equivalent method of compliance with this AD must be approved by the Chief, Engineering and Manufacturing Branch, FAA, Central Region.

This amendment becomes effective December 22, 1978.

(NOTE: The aircraft requiring AD compliance is a Cessna 152, serial number A1520778 with a total time of 2256 and tach reading of 256.2. The date is 12-20-85.)

DATE 19___	A D NUMBERS	TOTAL TIME IN SERVICE	**AIRWORTHINESS DIRECTIVES** CHRONOLOGICAL LISTING OF COMPLIANCE AND METHOD OF COMPLIANCE

Cessna.

"TAKE YOUR CESSNA HOME FOR SERVICE AT THE SIGN OF THE CESSNA SHIELD"

single-engine SERVICE LETTER

MARKETING DIVISION • CESSNA AIRCRAFT COMPANY
WICHITA, KANSAS 67201 • CABLE ADDRESS / CESSCO WICHITA

October 13, 1978

SE78-62

SUBJECT: VERTICAL FIN ATTACH BRACKET

AIRCRAFT APPLICABILITY: 1976 thru Early 1979 Models 150, 152, A150 and A152 Series Aircraft

Serial numbers . . . .

15077789 thru 15079405	F15001267 thru F15001428
A1500654 thru A1500734	FRA1500285 thru FRA1500336
15279406 thru 15282617	F15201429 thru F15201536
A1520735 thru A1520833	FA1520337 thru FA1520348

Because of the possibility of metallurgical impurities in the vertical fin attach brackets on Models 150 and 152, these attach brackets must be replaced on the aerobatic versions (A150 and A152) as listed above, within the next 25 hours of flight and inspected on the 150's and 152's listed.

The brackets should be visually inspected for indications of cracks in the area where the vertical legs intersect the base. This inspection should be made at every normal inspection period. Instructions for the inspection and replacement of the brackets, if required, are attached.

Parts required to replace the attach brackets are listed below and are available through the Cessna Dealer Organization at the suggested list prices shown.

Part Number	Description	Price
0431009-3	Attach Bracket (2 required)	$15.80 (S) each
MS21043-3	Nut (10 required)	$ .87 (S) each

continued . . .

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CESSNA AIRCRAFT COMPANY

THERE ARE MORE CESSNAS FLYING THAN ANY OTHER MAKE

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Full parts credit plus a labor allowance will be paid for replacing the brackets provided all work is accomplished and a credit claim is submitted by your Cessna Dealer prior to the following dates.

Domestic . . . . March 1, 1979

International. . . . . May 1, 1979

* * * * * *

(Owner Notification System - No. 2)

ALL PRICES SUBJECT TO CHANGE WITHOUT NOTICE

CESSNA AIRCRAFT COMPANY

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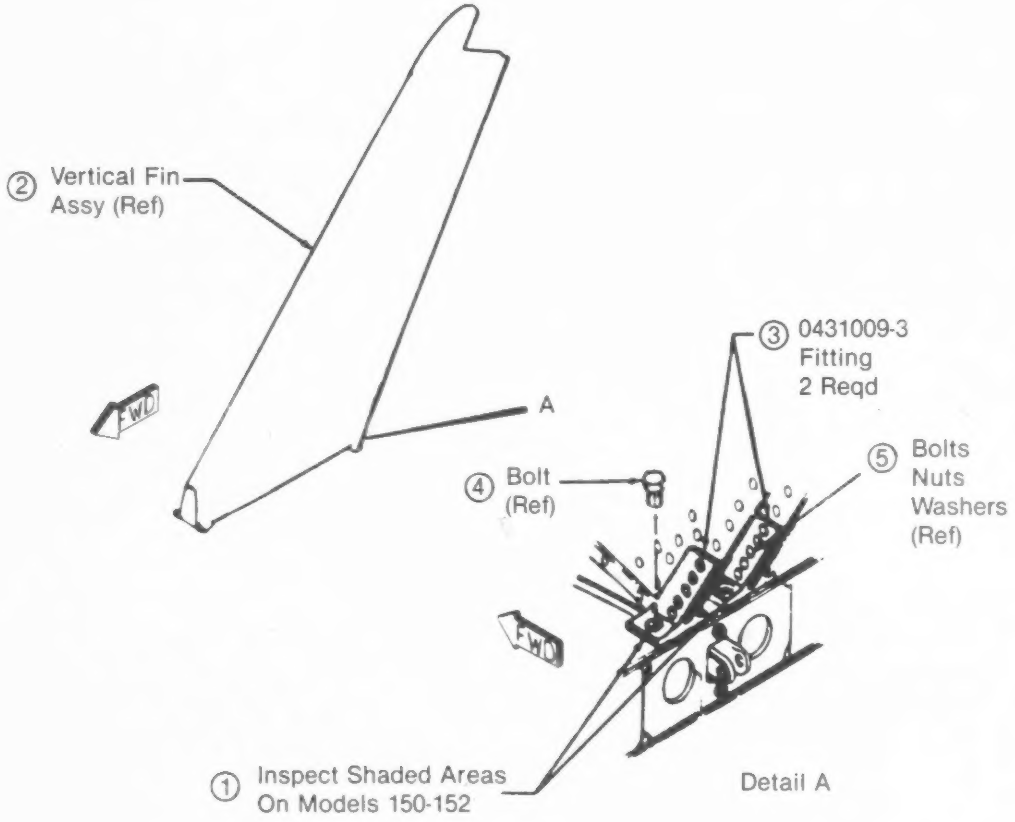
WORKBOOK SUPPLEMENT #5


② Vertical Fin Assy (Ref)
FWD
A
③ 0431009-3 Fitting 2 Reqd
④ Bolt (Ref)
⑤ Bolts Nuts Washers (Ref)
FWD
① Inspect Shaded Areas On Models 150-152
Detail A

INSPECTION PROCEDURE — MODEL 150/152

1. Visually inspect the vertical fin attach fittings (3) for indications of cracks in the fittings. If there are any indications of this type of failure, they must be replaced.

REPLACEMENT PROCEDURE — MODEL A150/152 AND 150/152 IF REQUIRED

1. Remove bolts (4) from spar cap and bolts, nuts and washers (5) from attach fittings (3).

2. The ten pilot holes required for bolts (5) will have to be back drilled on assembly to .161 diameter.

3. For installation of new parts reverse step one, and torque nuts (5) to 46 lb. inches. Bolts (4) require standard torque from 50 to 70 lb. inches.

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WORKBOOK SUPPLEMENT #6--Interpret Form FAA 337 and FAR 1, Part 43, Appendix B

Major Repair and Alteration Form FAA-337 must be completed whenever a major repair or major alteration is performed on an aircraft.

These forms are available from the FAA, and are to be filled out and signed by the appropriate agencies. The original form should be placed in the aircraft's permanent maintenance records and the duplicate sent to the General Aviation District Office.

FAR Part 43, Appendix B, lists the procedure for executing Form FAA 337 for certificated repair stations.

Use FAR Part 43, Appendix B as a reference and complete the following statements related to Form FAA-337.

A. Major Repair and Alteration Form FAA 337 must be filled out whenever a ________________ or ________________ is performed on an aircraft.

B. The four agencies who may use the form are __________, __________, __________________________, ____________________.

C. The information needed for items one and two on the form is to be taken from the ________________________ certificate.

D. If the form is filled out by a certificated mechanic, then item 6 A will show ____________________ address.

E. The minimum number of copies to be filled out is __________________.

F. For legal purposes, all signatures on all copies must be __________ ____________________.

G. Form FAA-337 is made available to the public by the ______________.

H. If more space is required on the back of the form you may ____________________, __________________, ____________________.

I. If, as a result of an alteration the weight and balance is affected, new computations should be entered in the ________________________ records.

J. An aircraft can be returned to service as soon as the inspecting agency checks the ___________________ box and signs Form FAA 337.

K. All entries on Form FAA 337 should be ____________ or ____________.

WORKBOOK SUPPLEMENT #6

FEDERAL AVIATION AGENCY **MAJOR REPAIR AND ALTERATION** **(Airframe, Powerplant, Propeller, or Appliance)**	*Form Approved* *Budget Bureau No. 04-R060.1* FOR FAA USE ONLY OFFICE IDENTIFICATION

INSTRUCTIONS: Print or type all entries. See PAR 43.9, FAR 43 Appendix B, and AC 43.9-1 (or subsequent revision thereof) for instructions and disposition of this form.

1. AIRCRAFT	MAKE	MODEL
	SERIAL NO.	NATIONALITY AND REGISTRATION MARK
2 OWNER	NAME *(As shown on registration certificate)*	ADDRESS *(As shown on registration certificate)*

3. FOR FAA USE ONLY

4. UNIT IDENTIFICATION				5. TYPE	
UNIT	MAKE	MODEL	SERIAL NO.	REPAIR	ALTERATION
AIRFRAME	◆◆◆◆◆◆◆◆◆◆◆◆◆◆◆◆◆◆◆◆◆◆◆ *(As described in item 1 above)* ◆◆◆◆◆◆◆◆◆◆◆◆◆◆◆◆◆◆◆◆◆◆◆				
POWERPLANT					
PROPELLER					
APPLIANCE	TYPE MANUFACTURER				

6. CONFORMITY STATEMENT

A. AGENCY'S NAME AND ADDRESS	B. KIND OF AGENCY	C. CERTIFICATE NO.
	☐ U.S. CERTIFICATED MECHANIC ☐ FOREIGN CERTIFICATED MECHANIC ☐ CERTIFICATED REPAIR STATION ☐ MANUFACTURER	

D. I certify that the repair and/or alteration made to the unit(s) identified in item 4 above and described on the reverse or attachments hereto have been made in accordance with the requirements of Part 43 of the U.S. Federal Aviation Regulations and that the information furnished herein is true and correct to the best of my knowledge.

DATE	SIGNATURE OF AUTHORIZED INDIVIDUAL

7. APPROVAL FOR RETURN TO SERVICE

Pursuant to the authority given persons specified below, the unit identified in item 4 was inspected in the manner prescribed by the Administrator of the Federal Aviation Agency and is ☐ APPROVED ☐ REJECTED

BY	☐ FAA FLT STANDARDS INSPECTOR	☐ MANUFACTURER	☐ INSPECTION AUTHORIZATION	OTHER *(Specify)*
	☐ FAA DESIGNEE	☐ REPAIR STATION	☐ CANADIAN DEPARTMENT OF TRANSPORT INSPECTOR OF AIRCRAFT	

DATE OF APPROVAL OR REJECTION	CERTIFICATE OR DESIGNATION NO.	SIGNATURE OF AUTHORIZED INDIVIDUAL

FAA Form 337 (1-65) OBSOLETE PREVIOUS EDITION 0052-025-8000 (8320)

WORKBOOK SUPPLEMENT #6

NOTICE

Weight and balance or operating limitation changes shall be entered in the appropriate aircraft record. An alteration must be compatible with all previous alterations to assure continued conformity with the applicable airworthiness requirements.

8. DESCRIPTION OF WORK ACCOMPLISHED *(If more space is required, attach additional sheets. Identify with aircraft nationality and registration mark and date work completed.)*

☐ ADDITIONAL SHEETS ARE ATTACHED

☆ U.S. GOVERNMENT PRINTING OFFICE 1965 OF—761-748

ANSWERS TO WORKBOOK SUPPLEMENTS

Workbook Supplement #1

A. Owner; operator

B. Registration certificate; airworthiness certificate; radio transmitter license (if aircraft is radio equipped); flight manual/operator limitations

C. Airworthiness certificate

D. Radio transmitter license

E. Flight manual or operations limitations

F. Type certificate data sheet

G. Flight manual

Workbook Supplement #2

A. Checklist

B. 43

C. Date; signature

D. Make a maintenance entry similar to the signed and dated entry specified in 43.11 and provide the owner or operator with a list of discrepancies and unairworthy items.

E. I certify that this aircraft has been inspected in accordance with (insert type) inspection and was determined to be in airworthy condition.

F. I certify that this aircraft has been inspected in accordance with (insert type) inspection and a list of discrepancies and unairworthy items dated (date) has been provided for the aircraft owner or operator.

G. I certify that in accordance with a progressive inspection program, a routine inspection of (identify either aircraft or components) and a detailed inspection of (identify components) were performed and the (aircraft or components) are (approved or disapproved) for return to service.

ANSWERS TO WORKBOOK SUPPLEMENTS

H. Inspection program; inspection program; accordance

I. Unairworthy; type certificate data sheet; approved data; list of discrepancies

Workbook Supplement #3

A.

AIRCRAFT LOG

DATE 1985	RECORDING TACH TIME	TODAYS FLIGHT	TOTAL TIME IN SERVICE	DESCRIPTION OF INSPECTIONS, TESTS, REPAIRS AND ALTERATIONS ENTRIES MUST BE ENDORSED WITH NAME, RATING AND CERTIFICATE NUMBER OF MECHANIC OR REPAIR FACILITY. (SEE BACK PAGES FOR OTHER SPECIFIC ENTRIES)
5-9	1002.5		1002.5	Serviced nose strut with MIL-H-5606
				hydraulic fluid. Inflated strut to
				20 PSI. All work done in accordance
				with Cessna Service Manual Series
				D2037-13.
				Jane Smith (A&P 149365443)

B.

AIRCRAFT LOG

DATE 19___	RECORDING TACH TIME	TODAYS FLIGHT	TOTAL TIME IN SERVICE	DESCRIPTION OF INSPECTIONS, TESTS, REPAIRS AND ALTERATIONS ENTRIES MUST BE ENDORSED WITH NAME, RATING AND CERTIFICATE NUMBER OF MECHANIC OR REPAIR FACILITY. (SEE BACK PAGES FOR OTHER SPECIFIC ENTRIES)
5-9	1002.5		1002.5	Replaced brake linings (left & right).
				Serviced brake system with MIL-H
				5606 Hydraulic fluid and bled
				system. All work done in accordance
				with Cessna Service Manual, Series
				D2037-13.
				Jane Smith (A&P 149365443)

C.

AIRCRAFT LOG

DATE 19___	RECORDING TACH TIME	TODAYS FLIGHT	TOTAL TIME IN SERVICE	DESCRIPTION OF INSPECTIONS, TESTS, REPAIRS AND ALTERATIONS ENTRIES MUST BE ENDORSED WITH NAME, RATING AND CERTIFICATE NUMBER OF MECHANIC OR REPAIR FACILITY. (SEE BACK PAGES FOR OTHER SPECIFIC ENTRIES)
5-9	1002.5		10025	Removed and replaced aircraft battery
				with similar (FAA-PMA. REBAT TYPE 3A)
				(12.75 ampere-hour). Serviced battery
				according to manufacturer's servicing
				bulletin #10A40 and installed in
				accordance with Cessna Service
				Manual Series D2037-13.
				Jane Smith (A&P 149365443)

D.

AIRCRAFT LOG

DATE 19___	RECORDING TACH TIME	TODAYS FLIGHT	TOTAL TIME IN SERVICE	DESCRIPTION OF INSPECTIONS, TESTS, REPAIRS AND ALTERATIONS ENTRIES MUST BE ENDORSED WITH NAME, RATING AND CERTIFICATE NUMBER OF MECHANIC OR REPAIR FACILITY. (SEE BACK PAGES FOR OTHER SPECIFIC ENTRIES)
5-9	1002.5		1002.5	Installed new bulb in rotating beacon.
				All work done in accordance with
				Cessna Service Manual Series
				D2037-13.
				Jane Smith (A&P 149365443)

E.

AIRCRAFT LOG

DATE 19___	RECORDING TACH TIME	TODAYS FLIGHT	TOTAL TIME IN SERVICE	DESCRIPTION OF INSPECTIONS, TESTS, REPAIRS AND ALTERATIONS ENTRIES MUST BE ENDORSED WITH NAME, RATING AND CERTIFICATE NUMBER OF MECHANIC OR REPAIR FACILITY. (SEE BACK PAGES FOR OTHER SPECIFIC ENTRIES)
5-9	1002.5		1002.5	Installed new spark plugs and
				torqued to 500 in. lbs. All work done
				in accordance with Cessna Service
				Manual Series D2037-13.
				Jane Smith (A&P 149365443)

F.

AIRCRAFT LOG

DATE 19___	RECORDING TACH TIME	TODAYS FLIGHT	TOTAL TIME IN SERVICE	DESCRIPTION OF INSPECTIONS, TESTS, REPAIRS AND ALTERATIONS ENTRIES MUST BE ENDORSED WITH NAME, RATING AND CERTIFICATE NUMBER OF MECHANIC OR REPAIR FACILITY. (SEE BACK PAGES FOR OTHER SPECIFIC ENTRIES)
5-9	1002.5		1002.5	I certify that this aircraft has
				been inspected in accordance
				with 100 hour inspection and
				was determined to be in air-
				worthy condition.
				Jane Smith (A&P 149365443)

ANSWERS TO WORKBOOK SUPPLEMENTS

Workbook Supplement #4

A. Compliance, date

B. Recurring date, time

C. Owner or operator

Workbook Supplement #5

DATE 19___	A.D NUMBERS	TOTAL TIME IN SERVICE	AIRWORTHINESS DIRECTIVES CHRONOLOGICAL LISTING OF COMPLIANCE AND METHOD OF COMPLIANCE.
12-20	78-25-07	2256	Replaced the two existing part number
			0431009-3 vertical fin attach bracket
			with two new part number 0431009-3.
			Attached brackets obtained from
			Cessna in compliance with AD 78-25-07.
			Jane Smith (A&P149365443)

ANSWERS TO WORKBOOK SUPPLEMENTS

Workbook Supplement #6

A. Major repair, major alteration

B. U.S. certificated mechanic, foreign certificated mechanic, certificated repair station, manufacturer

C. Registration

D. His or her (agency's)

E. Two

F. Original

G. FAA

H. Attach additional sheets

I. Appropriate aircraft

J. Approved

K. Printed or typed

GENERAL
G103 FUNDAMENTALS OF REGULATIONS, PUBLICATIONS, AND RECORDS
DOCUMENT AIRCRAFT RECORDS
G103-C

THEORY TEST

1. Match terms related to aircraft maintenance records to their correct definitions. Write the correct numbers in the blanks.

_____a. Complete documentation of data and details (according to FAR Part 43) of any major repairs or major alterations performed on an aircraft

_____b. List of required and optional equipment installed on an aircraft

_____c. Part or component that has a designated number of hours, cycles of operation, or calendar time set forth by appropriate documentation applicable to FAR approval

_____d. In relation to maintenance records, time from the moment an aircraft leaves the surface of the earth until it touches the surface of the earth at the next point of landing

_____e. Any applicable form used to record aircraft engine maintenance

_____f. Approved information which must be carried in an aircraft, pertains to operational limitations, equipment list, and other information that is vital to pilot for safe flight of that aircraft

_____g. Maximum use of (life-limited part) battery before replacement or recharging in accordance with FAR Part 91.52

_____h. Document in aircraft which contains name and address of person(s) to whom aircraft is registered

1. Life-limited part
2. Equipment list
3. Engine maintenance record
4. Repairs and alterations form
5. Flight manual
6. Time in service
7. ELT battery due date
8. Registration certificate

_____i. Any applicable form used to record aircraft maintenance

_____j. Record that shows appropriate combination of weight and center of gravity within range of landing conditions for which certification is requested (applicable to FAR Part 21); these records must be carried in the aircraft

_____k. Certificate issued by the FAA to all aircraft which have met minimum standards required for certification applicable to FAR Part 21

_____l. Notice placed in or on aircraft depicting pertinent information relating to the aircraft, its operation, and particular component limitations relative to legality and safety of operation

_____m. Authorization document issued by the Federal Communication Commission to register and operate an aircraft transmitter; must be carried in aircraft

_____n. Tag used by certificated repair stations to document conditions of parts and appliances

_____o. Airworthiness directive that requires compliance at regular hourly or calendar time periods

_____p. Mechanic or other authorized person making required maintenance documentation (according to the applicable FARs) for returning an aircraft or appliance to service

9. Airworthiness certificate

10. Radio transmitter license

11. Weight-and-balance form record

12. Airframe maintenance record

13. Markings and placards

14. Recurring AD

15. Approved for return-to-service

16. Airworthy parts tag

THEORY TEST

2. State facts related to aircraft permanent and temporary records and the forms used to document the records. Write the correct answers in the blanks.

   a. List the maintenance records that must be permanently kept with an aircraft and transferred with the aircraft when it is sold.

      1) ____

      2) ____

      3) ____

      4) ____

      5) ____

      6) ____

   b. What are considered to be temporary maintenance records?

      1) ____

      2) ____

   c. What part of the FARs describes the maintenance records that must be kept on a certificated aircraft?

      ____

   d. What is the purpose of filling in and sending to the FAA a malfunction or defect report when a discrepancy has been found on an aircraft?

      ____

      ____

      ____

3. List documents in an aircraft record file and explain their purposes.

   a. ____

      ____

      ____

b.

c.

d.

e.

f.

4. Interpret FAR Parts 43 and 91 requirements related to aircraft record files.

   (NOTE: Test question 4 is a workbook supplement. It is an important part of this test. If it has not been completed, check with your instructor.)

5. Explain the relationship between an inspection checklist and Appendix D of FAR Part 43.

THEORY TEST

(NOTE: Test questions 6-9 are workbook supplements. They are an important part of this test. If they have not been completed, check with your instructor.)

6. Perform log book entries for maintenance and inspection.

7. Interpret FAR Part 91 applicable to aircraft airworthiness directives.

8. Perform maintenance record entries of airworthiness directives compliance.

9. Interpret Form FAA 337 and FAR 1 Part 43, Appendix B.

GENERAL

G103 FUNDAMENTALS OF REGULATIONS, PUBLICATIONS, AND RECORDS

DOCUMENT AIRCRAFT RECORDS

G103-C

ANSWERS TO THEORY TEST

1.

a.	4	h.	8	o.	14
b.	2	i.	12	p.	15
c.	1	j.	11		
d.	6	k.	9		
e.	3	i.	13		
f.	5	m.	10		
g.	7	n.	16		

2. a. 1) Total time in service of the airframe
   - 2) Current status of life-limited parts
   - 3) Time since last overhaul of all items having a specified overhaul schedule
   - 4) Identification of current inspection status of the aircraft
   - 5) Current status of all applicable airworthiness directives
   - 6) List of current major alternations

   b. 1) Records of maintenance and alterations
   - 2) Records of 100-hour, annual, or progressive inspections

   c. FAR Part 91

   d. These forms help the FAA locate problems that may possibly result in a major safety compromise

3. a. Registration certificate--Gives evidence that the aircraft is listed in the FAA registry and documents the person's name and address to whom the aircraft is registered

   b. Airworthiness certificate--Issued by the FAA that this aircraft has met the minimum standards required for certification applicable to FAR Part 21 and can be used to refer to aircraft specifications according to its categories in FAR Part 23

ANSWERS TO THEORY TEST

c. Operating limitations or flight manual--Include the operating limits for powerplants, auxiliary systems, equipment lists, weight and balance, and loading information and other information that is vital to the pilot for safe flight operations

d. Radio transmitter license--Issued by the Federal Communications Commission and registers the radio transmitter contained in the aircraft

e. Log books--Contain records of time in service and descriptions of all inspections, tests, repairs, and alterations of the aircraft, engine, propeller, and appliances

f. Additional records--Information about the status of current airworthiness directives, major repair and alteration forms, a directory of life limited parts with their replacement times, and emergency locator transmitter battery replacement date

4. Evaluated to the satisfaction of the instructor

5. Appendix D of FAR Part 43 establishes the guidelines for development of an inspection checklist

6. Evaluated to the satisfaction of the instructor

7. Evaluated to the satisfaction of the instructor

8. Evaluated to the satisfaction of the instructor

9. Evaluated to the satisfaction of the instructor